

# Genius Max

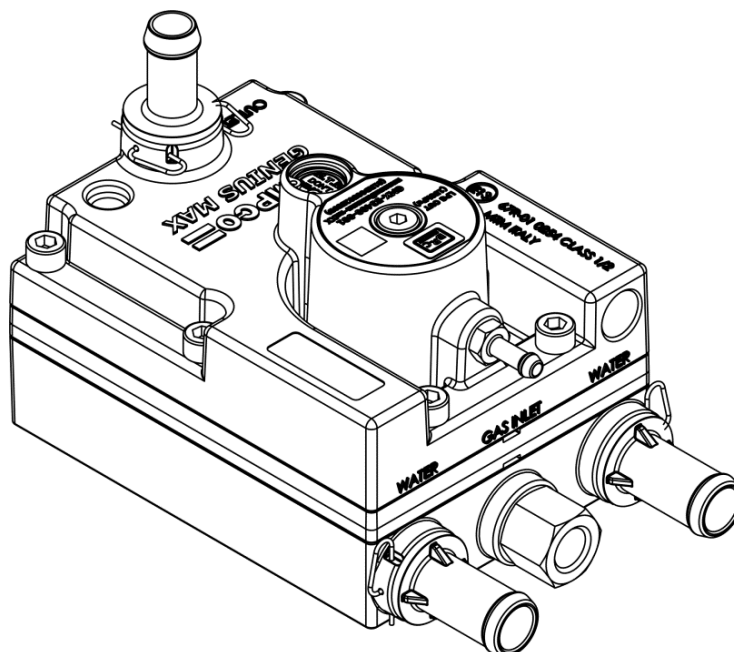
## REGULATOR REPAIR KIT INSTRUCTIONS

**NOTE:** Only die cast Genius Max regulators manufactured late 2014 and after can be repaired using the repair kits listed below. Repairable units are identified by the IMPCO logo and the words Genius Max cast into the top cover. All Genius Max regulators black in color are not serviceable using these repair kits.

Important: Any maintenance, service or repair should be performed by trained and experienced service technicians. Proper tools and equipment should be used to prevent injury to the servicing technician, property or system components. Service repairs should always be performed in a safe environment and the technician should always wear protective clothing to prevent injury.

The IMPCO PPI-131 repair kit instructions will provide the technician information to successfully repair the Genius Max regulator. Always inspect the major casting pieces for damage, corrosion or cracks before attempting a service repair. Be sure the repair kit part number you are using is correct for the regulator being serviced.

Prior to disassembly, inspect the body for any signs of impact, cracks or other damage to the body that might render the regulator non-repairable.



### WARNING

Do not use Teflon tape to seal any fuel fittings. Failure to follow this warning may cause the regulator to leak internally, that may cause serious injury and/or property damage.

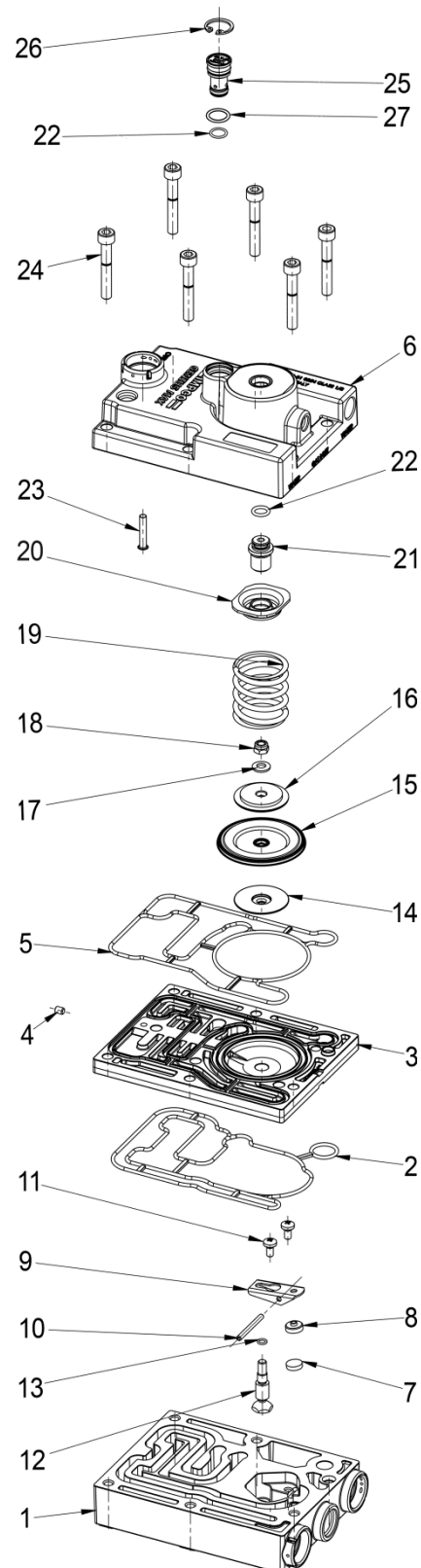
### Genius Max Regulator Repair Kit Part Numbers

Part Number	Description
<b>RK-GMAX-001</b>	Repair Kit, Genius Max
<b>RK-GMAX-002</b>	Repair Kit, Genius Max (Includes the Pressure Relief Device or valve)

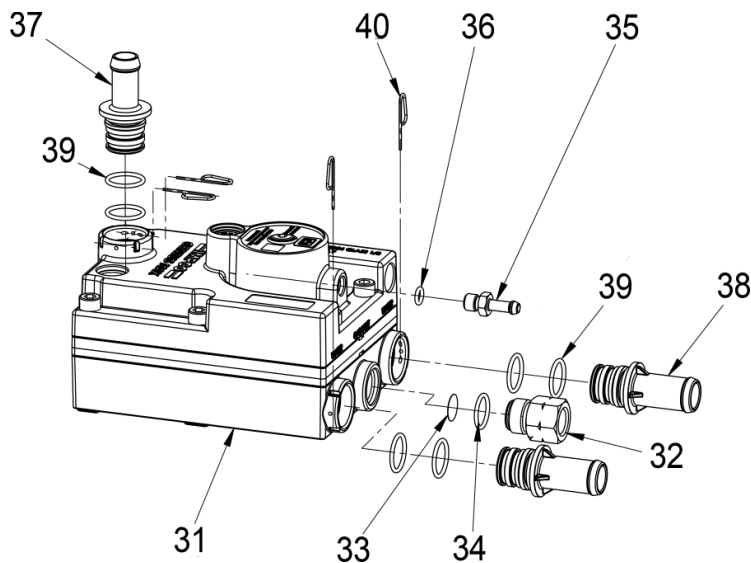
## Genius Max Regulator (Internal Fittings)

See following page for External Fittings

ITEM #	RK-GMAX	DESCRIPTION
1	-	Body, Lower, Genius Max Dc
2	-001, -002	Gasket, Bottom, Genius Max
3	-	Body, Center, Genius Max
4	-	Screw, Set M4x0.7x54mm
5	-001, -002	Gasket, Top, Genius Max
6	-	Body, Upper, Genius Max
7	-001, -002	Seat, Viton (80 Shore)
8	-	Holder, Seat, Genius Max
9	-	Lever, Genius Max
10	-	Pin, Steel, Ø3 X 30mm
11	-	Screw, Cross Head Pan M4 X 8mm (2)
12	-	Shaft, Link, Genius Max
13	-001, -002	O-Ring, Viton, Metric 1mm CS X 4mm ID
14	-	Plate, Diaphragm Bottom
15	-001, -002	Diaphragm, Genius Max
16	-	Plate, Top, Genius Max
17	-	Washer, Conical Spring, 5mm
18	-	Nut, Locking, M5
19	-	Spring, L48.5mm, O.D. 33.3mm, K11.8N/mm
20	-	Plate, Spring Load Adjustment
21	-	Screw, Adjustment
22	-001, -002	O-Ring, Fluorocarbon 0.070 Cs X 0.301 I.D. (2) <sup>1</sup>
23	-	Tube, Outlet, Genius Max
24	-	Screw, Shcs Pthd m6 x 40 Class 8.8 Zinc (6)
25	-002	Valve Subasm, Genius Max (includes 22 & 27)
26	-001, -002	Ring, Retaining, Internal
27	-	O-Ring, Fluorocarbon 0.070 Cs X 0.426 I.D.

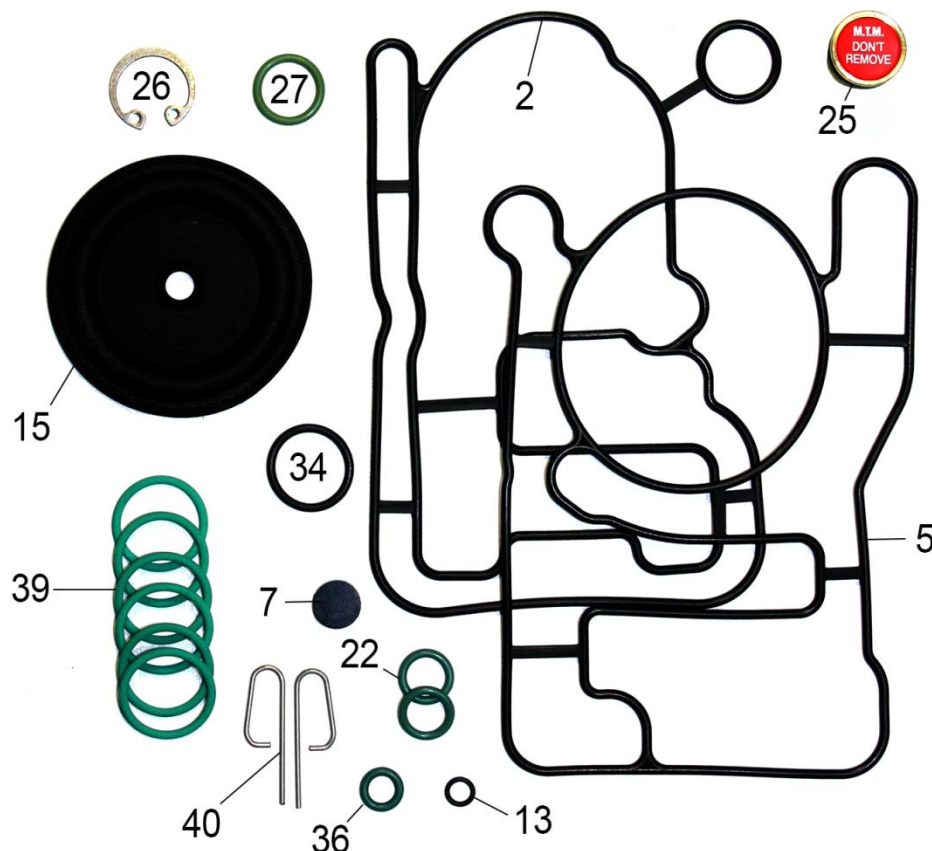


## Genius Max Regulator (External Fittings)



**Genius Max Regulator (GMX-53400-001 shown)**

ITEM #	RK-GMAX	DESCRIPTION
31	-	Genius Max Sub Assy w/M12 x 1 fitting Genius Max Sub Assy w/1/4" x 18 NPT
32	-	Fitting, LPG Inlet, Genius Max (M12 X 1) Fitting, LPG Inlet, Genius Max (1/4"-18 Npt)
33	-	Filter, Inlet, Genius Max
34	-001, -002	O-Ring, Fluorocarbon (Fluorel/Viton) 0.07 Cs X .551 I.D.
35	-	Fitting, M8 X 1, Genius Max
36	-001, -002	O-Ring, Fluorocarbon (Fluorel/Viton) 0.070 Cs X .208 I.D.
37	-	Fitting, 12mm Hose BRC Standard
38	-	Fitting, Straight
39	-001, -002	O-Ring, Fluorocarbon (Fluorel/Viton) 0.070 Cs X .614 I.D.
40	-001, -002	Pin, Retainer (2)



**Genius Max Repair Kit Components.**

Item#	Description	RK-GMAX-001	RK-GMAX-002
2	Gasket, Bottom, Genius Max	1	1
5	Gasket, Top, Genius Max	1	1
7	Seat, Viton (80 Shore)	1	1
13	O-Ring, Viton, Metric 1mm Cs X 4mm ID	1	1
15	Diaphragm, Genius Max	1	1
22	O-Ring, Fluorocarbon 0.070 Cs X 0.301 I.D.	2	1
25	Valve Subasm, Genius Max	-	1
26	Ring, Retaining, Internal	1	1
27	O-Ring, Fluorocarbon 0.070 Cs X 0.426 I.D.	1	-
34	O-Ring, Fluorocarbon (Fluorel/Viton) 0.07 Cs X .551 I.D.	1	1
36	O-Ring, Fluorocarbon (Fluorel/Viton) 0.070 Cs X .208 I.D.	1	1
39	O-Ring, Fluorocarbon (Fluorel/Viton) 0.070 Cs X .614 I.D.	6	6
40	Pin, Retainer (Part Number P1-30559)	2	2
Not Shown	Repair Kit Instructions, PPI-131	1	1

*Note that Valve Subassembly (25) is only included in RK-GMAX-002 which includes O-rings 22 and 27.*

## DISASSEMBLY INSTRUCTIONS



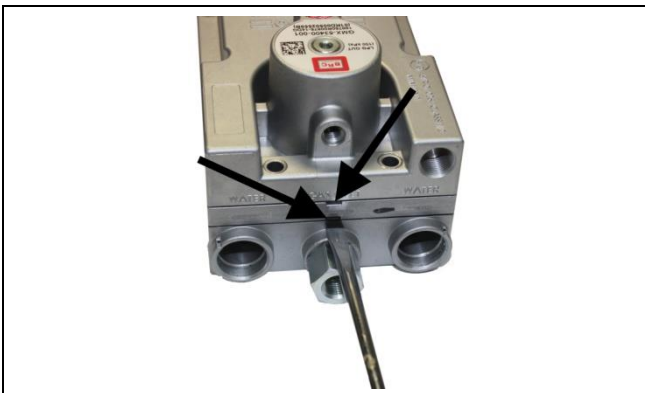
1. Remove the MAP hose Fitting (35).



2. Remove the Pins (40) retaining the port Fittings (38) and remove from the Body (1). Remove O-rings (39) from Fittings.



3. Using a 5mm Allen wrench, remove the six Screws (24) from the top of the regulator and remove the upper Body (6).



4. If the Body components stick together, the Center Body (3) includes two tabs (as shown in the photo) where a slotted screw driver can be inserted to pry to the Body components apart.

**NOTE:** Do not use a screwdriver or other sharp instrument at any location other than the tabs on the center body. Sharp objects may scratch or damage the sealing surfaces, causing the regulator to leak.

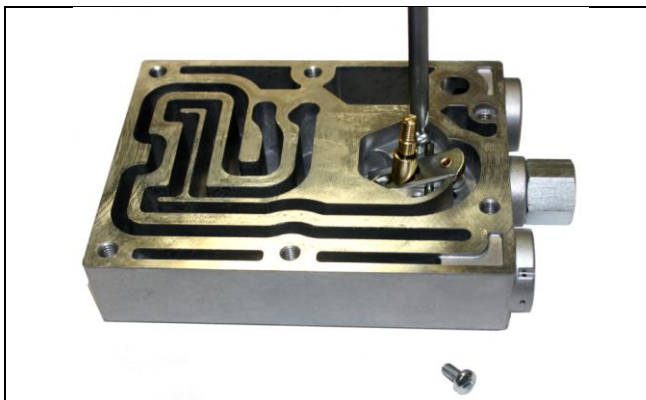




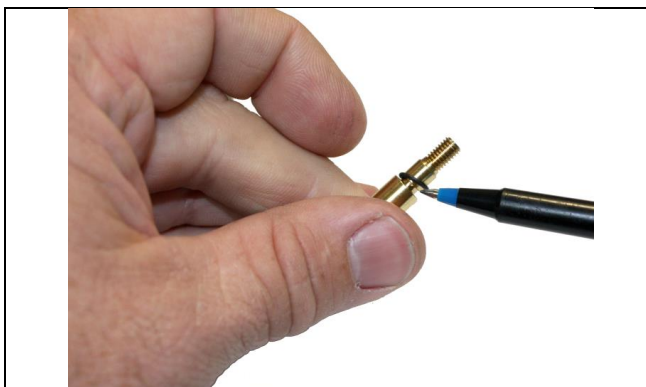
5. Remove the Nut (18) using an 8mm socket. Remove the Washer (17) and Plate (16).



6. Lift the Body Center (3) from the Lower Body (1).

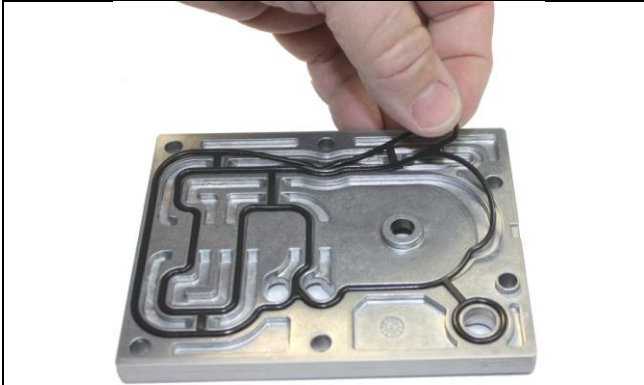


7. Remove the two screws (11) securing the fulcrum Pin (10) and remove the Pin and Lever (9) complete with Seat Holder (7 and 8).



8. Remove the Link Shaft (12) and its O-ring (13).

**NOTE:** Do not use any sharp objects that might scratch the brass Link Shaft.



9. Remove the Gaskets (2 and 5) from the Center Body (3).

**NOTE:** Do not use any sharp objects that might scratch any of the sealing surfaces.



10. Press on the Allen Key hole in the center of the label to push the Adjustment Screw (21) and Spring Load Plate (20) through the Link Shaft hole.



11. Using retaining ring pliers, remove the Retaining Ring (26) securing the Pressure Relief Device or Valve (25).



12. Note the bottom of the brass Valve (25) inside the channel of the Upper Body (6) and using a small regular flat-blade screwdriver, gently press the top of the blade until the Valve pops out the top of the Upper Body.

**NOTE:** Use care and avoid scratching any surfaces.



13. **RK-GMAX-001 Kit Only** (this step is not required when using RK-GMAX-002): Remove the O-rings (22 and 27) on the Valve (21).

**NOTE:** The Valve is a pre-set pressure relief device and is not serviceable. Do not remove the label, immerse in any fluid or cleaning solvent or attempt to service the Valve.



14. Remove the LPG Inlet Fitting (32).



15. Remove the Seat (7) from the Lever (8 & 9) by inserting a small blunt object through the hole from behind. A ballpoint pen is shown in the picture.



16. Once all of the gaskets and O-rings have been removed, thoroughly clean the body and metal components using a solvent to remove any deposits, varnish or contaminants.

**NOTE:** Do not use any solvent on the Valve (25) as it may be rendered unusable.

**NOTE:** Do not use any type of mechanical tool to scrape the sealing surfaces as they may cause the regulator to leak.



## REASSEMBLY OF REGULATOR

- Carefully clean and inspect all metal parts, springs, levers, pivot pins and screws. Replace all parts that are included in the repair kits.
- Carefully clean the body casting and inspect all sealing surfaces. Wipe with a clean rag. Clear out the inlet and outlet passages with compressed air. Be sure no foreign material remains in these passages.



17. Lightly lubricate with petroleum jelly or Vaseline and place the O-ring (34) on the Fuel Inlet Fitting (32).



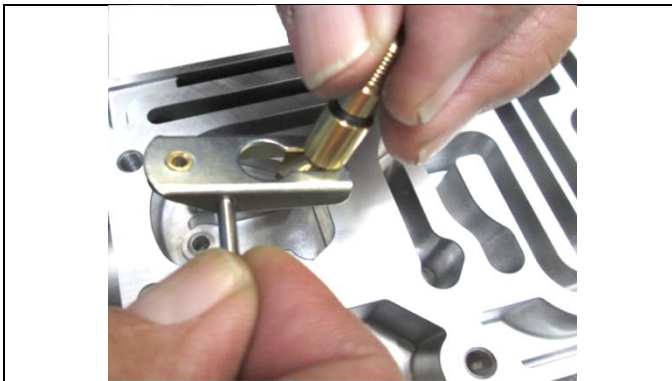
18. Install the LPG fuel fitting (32). Torque to 18-22 Nm (13.3-16.2 ft-lbs.).



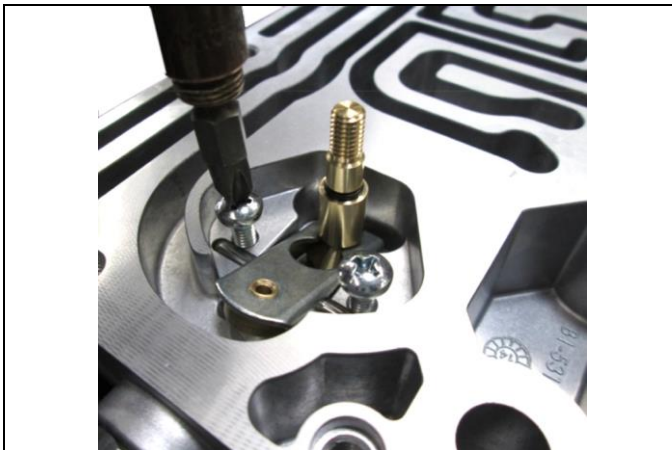
19. Press the Seat (7) into the Holder (8), installed on the Lever (9).



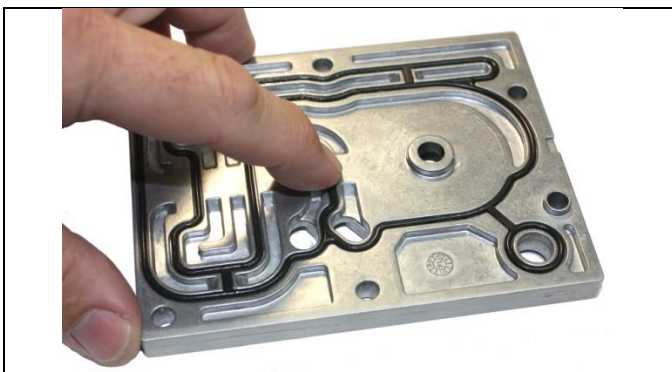
20. Slide the O-ring (13) on the Link Shaft (13).



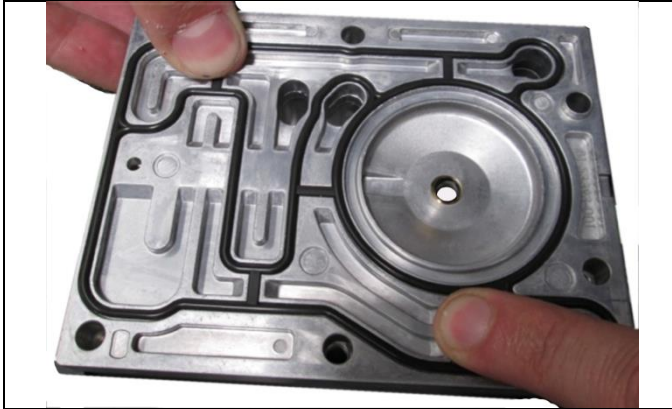
21. Place the Link Shaft (12) through the hole in the Lever (9) and slide to the end of the slot in the Lever. Slide the Pin (10) into the Lever, then place the assembly into the Lower Body (1).



22. Secure the Pin (10) with two Screws (11) and torque to 1.7-2.3 Nm (15-20 in-lbs.).



23. Lightly lubricate with petroleum jelly or Vaseline, then place the Bottom Gasket (2) on the Center Body (3). Press firmly into the groove, ensuring the Gasket isn't twisted and properly seated.



24. Lightly lubricate with petroleum jelly or Vaseline, then place the Top Gasket (5) on the top of the Center Body (3).



25. Place the Center Body (3) on the Lower Body (1) inserting the Link Shaft (12) through the Center Body.



26. Place the Bottom Diaphragm Plate (14) downward (flat side up) over the threaded Link Shaft (12)



27. Lightly lubricate the perimeter of the Diaphragm (15) with petroleum jelly or Vaseline, then place on top of the Center Body (3). Using your finger, press on the perimeter of the Diaphragm to ensure it properly seats into the Center body.

**NOTE:** The Diaphragm is positioned so the raised outer ring or bag is up (as pictured).

Place the Plate (16) flat side down on top of the Diaphragm. Place the Washer (17) concave side down so its perimeter is in contact with the Plate. Hand thread Nut (18) on Link Shaft (12).

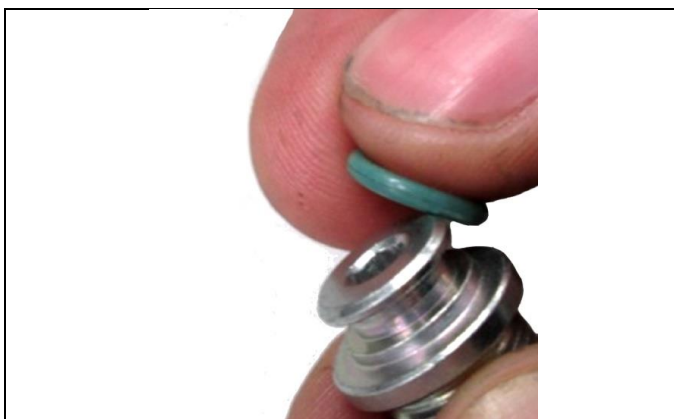




28. Torque the Nut (18) to 1.35-1.65 Nm (12-14.5 in-lbs.).



29. Place the Spring (19) on top of the Diaphragm Plate (16).



30. Lubricate O-ring (22) with petroleum jelly or Vaseline, and place on the Adjustment Screw (21).

**NOTE:** There is no need to separate the Adjustment Screw from the Plate (20).

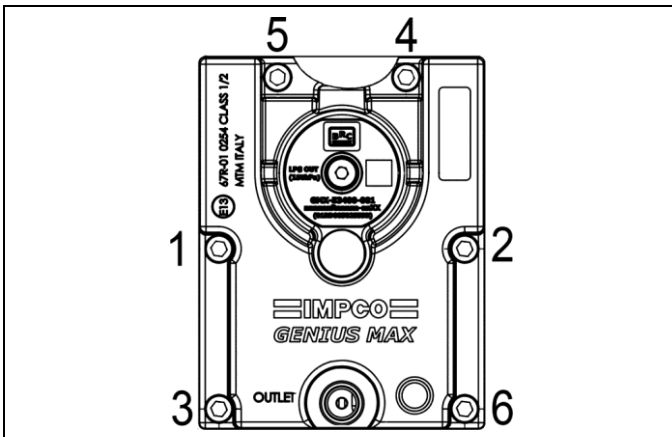


31. Press the Plate (20) and Adjustment Screw (21) assembly into the bottom of the Top Body (6) so the Adjustment Screw fits flush with the top of the Body.

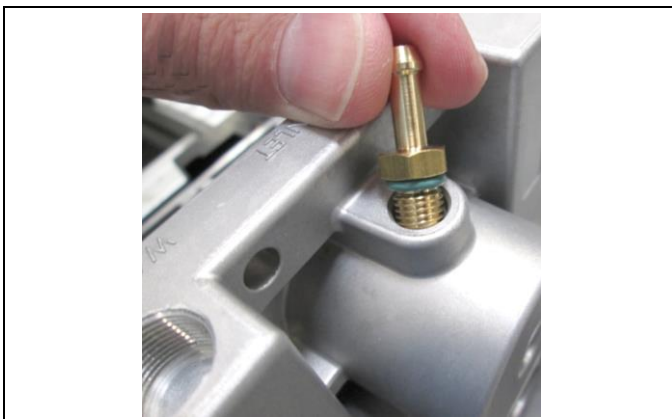




32. Place the Top Body (6) on top of the Center (3) and Lower Body (1) assembly. Press down to compress the spring while lightly tightening the Screws (24).



33. Torque each Screw (24) in a criss-cross pattern in the order pictured to 7.4-8.6 Nm (5.5-6.3 ft-lbs.).



34. Lubricate O-ring (36) with petroleum jelly or Vaseline, and place on MAP Fitting (35). Thread into the Top Body (6) and using a 10mm socket wrench, torque to 2.55-3.45 Nm. (22.5-30.5 in-lbs.).



35. Lubricate O-rings (22 and 27) with petroleum jelly or Vaseline, and place on the Valve (25).

**NOTE:** When using repair kit RK-GMAX-002, discard the old Valve and use the new one included in the kit, complete with new O-rings.



35. Press in the Valve (25) until it seats below the rim of the Top Body (6).



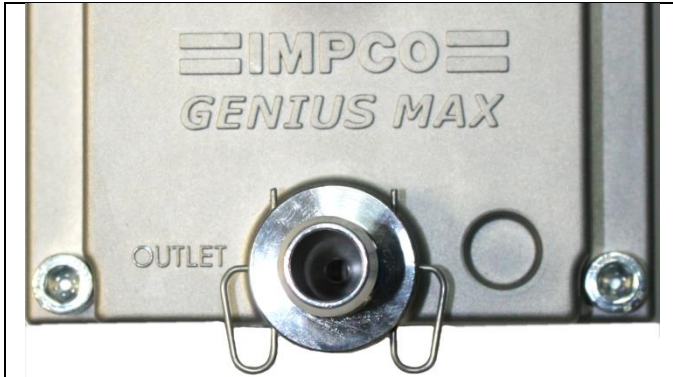
36. Secure the Valve (25) with the new Ring Clip (26) using Ring clip pliers.



37. Lubricate O-rings (39) with petroleum jelly or Vaseline, and place two on each of the Port Fittings (38).



38. Insert the Coolant Fittings (38) into the ports on the Lower Body (1) and secure with Retaining Pins (40).



39. Insert the Fuel Outlet Fitting (37) into the port of the Upper Body (6) and secure with Retaining Clips (40) as pictured.

40. Install the Genius Max regulator in the vehicle and turn on the fuel supply to pressurize the regulator. Using soap and/or a commercial leak detector solution, check for leaks, especially around the Center Body (3). If no leaks are found, start the engine, allow to idle and check for leaks again. If leaks are found, the rebuild has failed and the regulator must be replaced.

47. If no leaks are found, check the outlet pressure using computer based diagnostic software to read the fuel rail pressure sensor. Start the engine and note the pressure. The pressure should read 1.45-1.55 Bar (21.0-22.5.psi). If not, the pressure can be adjusted using a 4mm Allen key. Turn the Adjustment Screw (21) clockwise to reduce pressure and counter-clockwise to increase. Once the outlet pressure has been set to 1.45-1.55 Bar (21.0-22.5 psi), the regulator can be returned to service.



# WARNING:

## IMPROPER INSTALLATION OR USE OF THIS PRODUCT MAY CAUSE SERIOUS INJURY, DEATH AND/OR PROPERTY DAMAGE

**SERVICE TECHNICIANS AND USERS** SHOULD CAREFULLY READ AND ABIDE BY THE PROVISIONS SET FORTH IN NATIONAL FIRE PROTECTION ASSOCIATION PAMPHLET #37 FOR STATIONARY ENGINES, #52 FOR CNG VEHICULAR FUEL SYSTEMS OR #58 FOR LPG SYSTEMS.

**INSTALLERS** LPG INSTALLATIONS IN THE UNITED STATES MUST BE DONE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS AND NATIONAL FIRE PROTECTION ASSOCIATION PAMPHLET #58, STANDARD FOR STORAGE AND HANDLING OF LIQUEFIED PETROLEUM GASES, TO THE EXTENT THESE STANDARDS ARE NOT IN VIOLATION OF FEDERAL, STATE OR LOCAL LAW.

**COUNTRIES OUTSIDE OF USA** REFER TO THE GOVERNING AGENCIES OVERSEEING CNG AND PROPANE APPLICATIONS.

**CNG INSTALLATIONS IN THE UNITED STATES** MUST BE DONE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAW AND NATIONAL FIRE PROTECTION ASSOCIATION PAMPHLET #52, COMPRESSED NATURAL GAS (CNG) VEHICULAR FUEL SYSTEMS, TO THE EXTENT THESE STANDARDS ARE NOT IN VIOLATION OF FEDERAL, STATE OR LOCAL LAW.

**LPG AND/OR NATURAL GAS INSTALLATIONS ON STATIONARY ENGINES** MUST BE DONE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAW AND NATIONAL FIRE PROTECTION ASSOCIATION PAMPHLET #37, STATIONARY COMBUSTION ENGINES AND GAS TURBINE ENGINES, TO THE EXTENT THESE STANDARDS ARE NOT IN VIOLATION WITH FEDERAL, STATE OR LOCAL LAW. FAILURE TO ABIDE BY THE ABOVE WILL VOID ANY IMPCO WARRANTY ON THE PRODUCTS AND MAY CAUSE SERIOUS INJURY OR PROPERTY DAMAGE.

**SERVICE TECHNICIANS** DUE TO THE INHERENT DANGER OF GASEOUS FUELS, IMPCO PRODUCTS SHOULD NOT BE INSTALLED OR USED BY PERSONS NOT KNOWLEDGEABLE OF THE HAZARDS ASSOCIATED WITH THE USE OF GASEOUS FUELS. ANY MAINTENANCE, SERVICE OR REPAIR SHOULD BE PERFORMED BY TRAINED AND EXPERIENCED SERVICE TECHNICIANS.

**PROPER TOOLS AND EQUIPMENT** PROPER TOOLS AND EQUIPMENT SHOULD BE USED TO PREVENT INJURY TO THE SERVICING TECHNICIAN, PROPERTY OR SYSTEM COMPONENTS. SERVICE REPAIRS SHOULD ALWAYS BE PERFORMED IN A SAFE ENVIRONMENT AND THE TECHNICIAN SHOULD ALWAYS WEAR PROTECTIVE CLOTHING TO PREVENT INJURY.

**INSPECT BEFORE USE** ALWAYS INSPECT THE MAJOR CASTING PIECES FOR DAMAGE, CORROSION OR CRACKS BEFORE ATTEMPTING A SERVICE REPAIR. BE SURE THE REPAIR KIT PART NUMBER YOU ARE USING IS CORRECT FOR THE COMPONENT(S) BEING SERVICED.

**NO TEFLON TAPE** DO NOT USE TEFLON TAPE TO SEAL ANY FUEL FITTINGS. FAILURE TO FOLLOW THIS WARNING MAY CAUSE THE REGULATOR TO LEAK INTERNALLY, POSSIBLY RESULTING IN SERIOUS INJURY, DEATH AND/OR PROPERTY DAMAGE AND MAY VOID ANY WARRANTY COVERAGE.