

Injection Valves

1. CP Valve

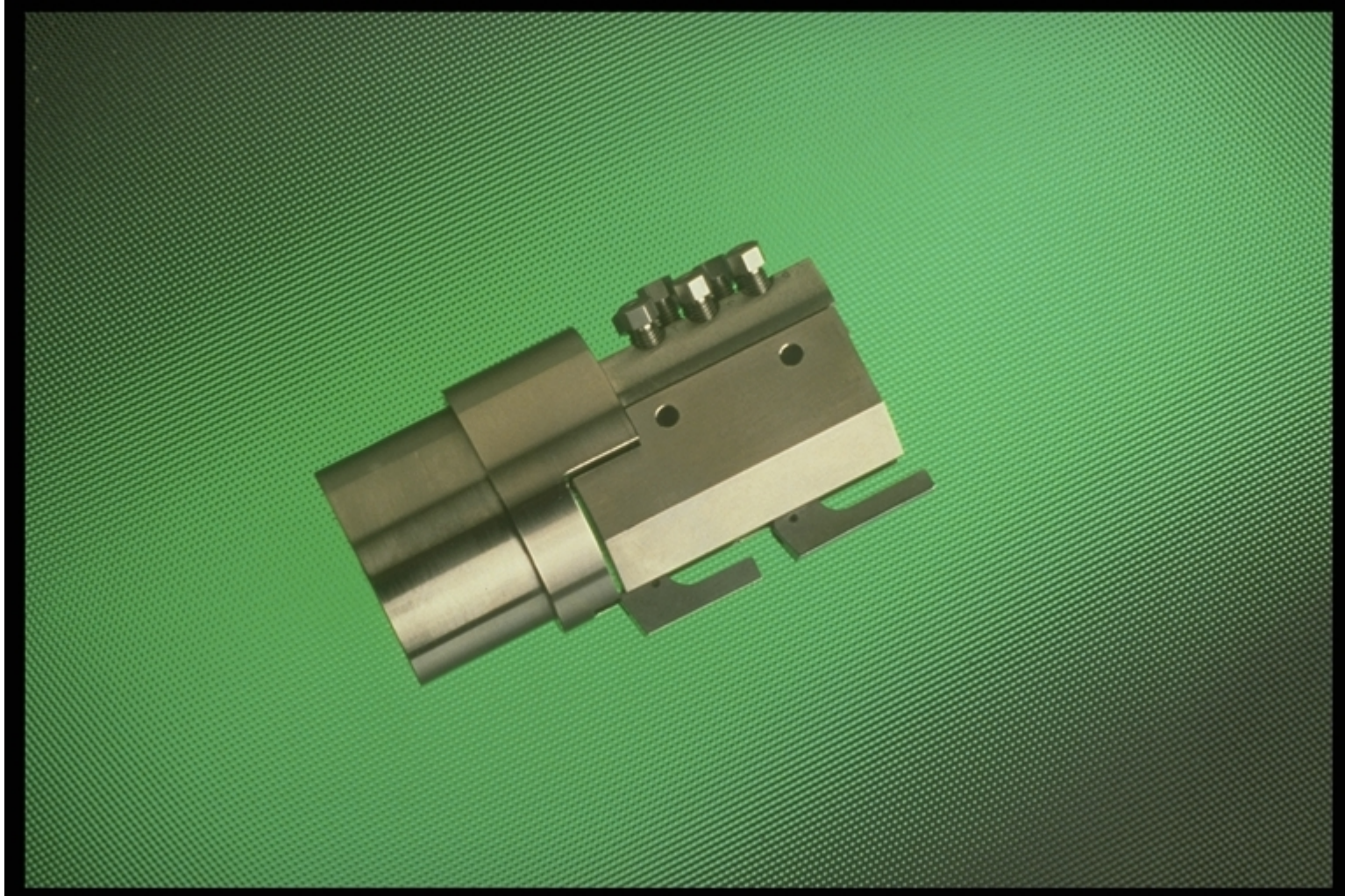
A sliding plate valve with external sample loop for gas injection.

2. Model 791

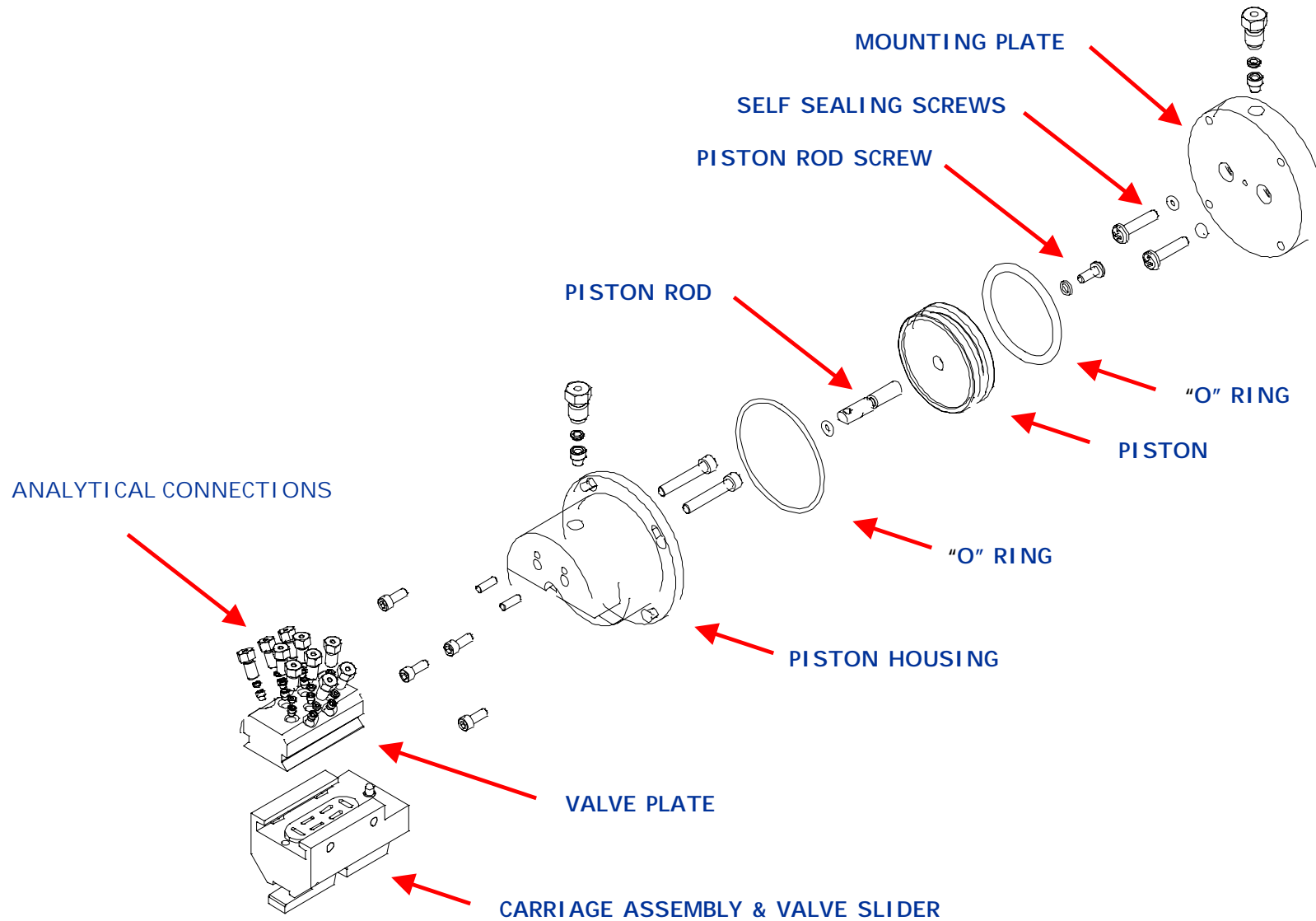
Liquid injection valve piston type with built in vaporizer.

● Injection valve must give a constant volume of sample to the GC.

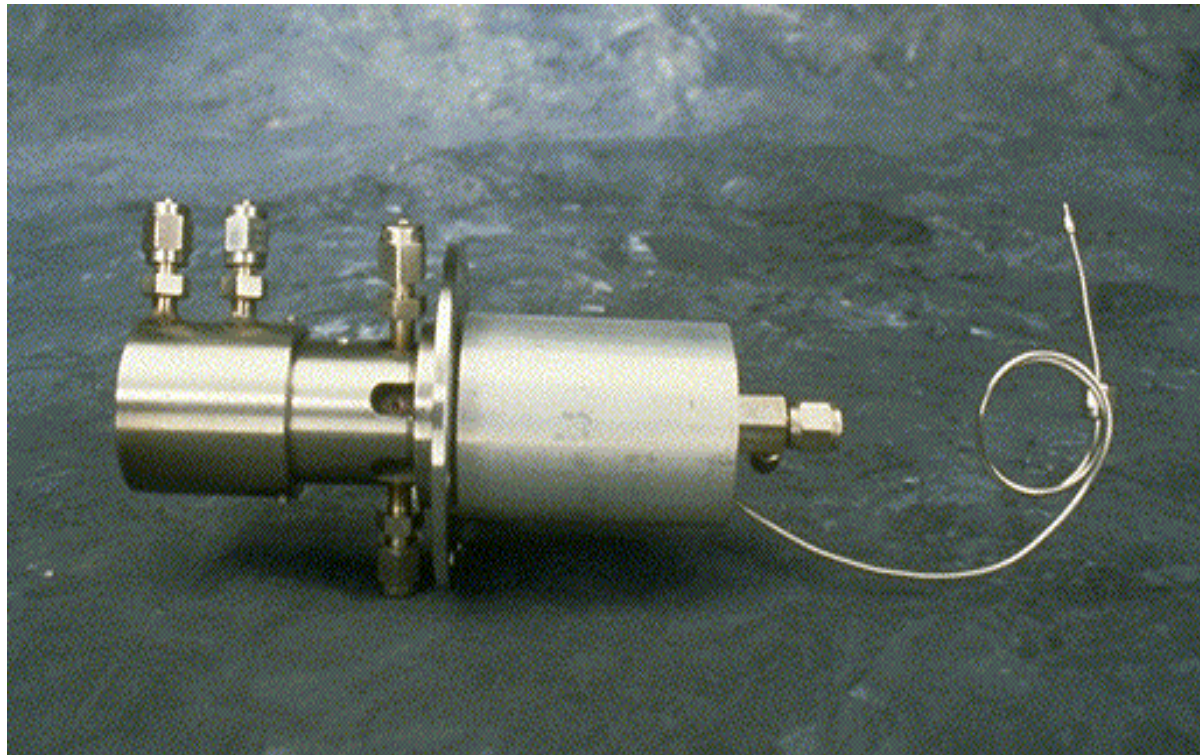
CP Valve



M2CP Valve (Exploded view)



Model 791 Micro Liquid Inject Valve



Model 791 MLIV

- Features & Benefits
- Low cost, wear compensating seals yield long life.
 - Minimal sample contact with the seals minimizes “sample memory effect”.
 - Long seal life = reduced maintenance cost.
 - High sample pressure to 435 psi (30 bar)
 - Small stem and sample size improve vaporization and chromatography (provides plug injection).
 - Proprietary surface deactivated vaporizer, with integral splitter. Improves analysis of reactive samples such as Sulfur containing compounds, Amines, etc...

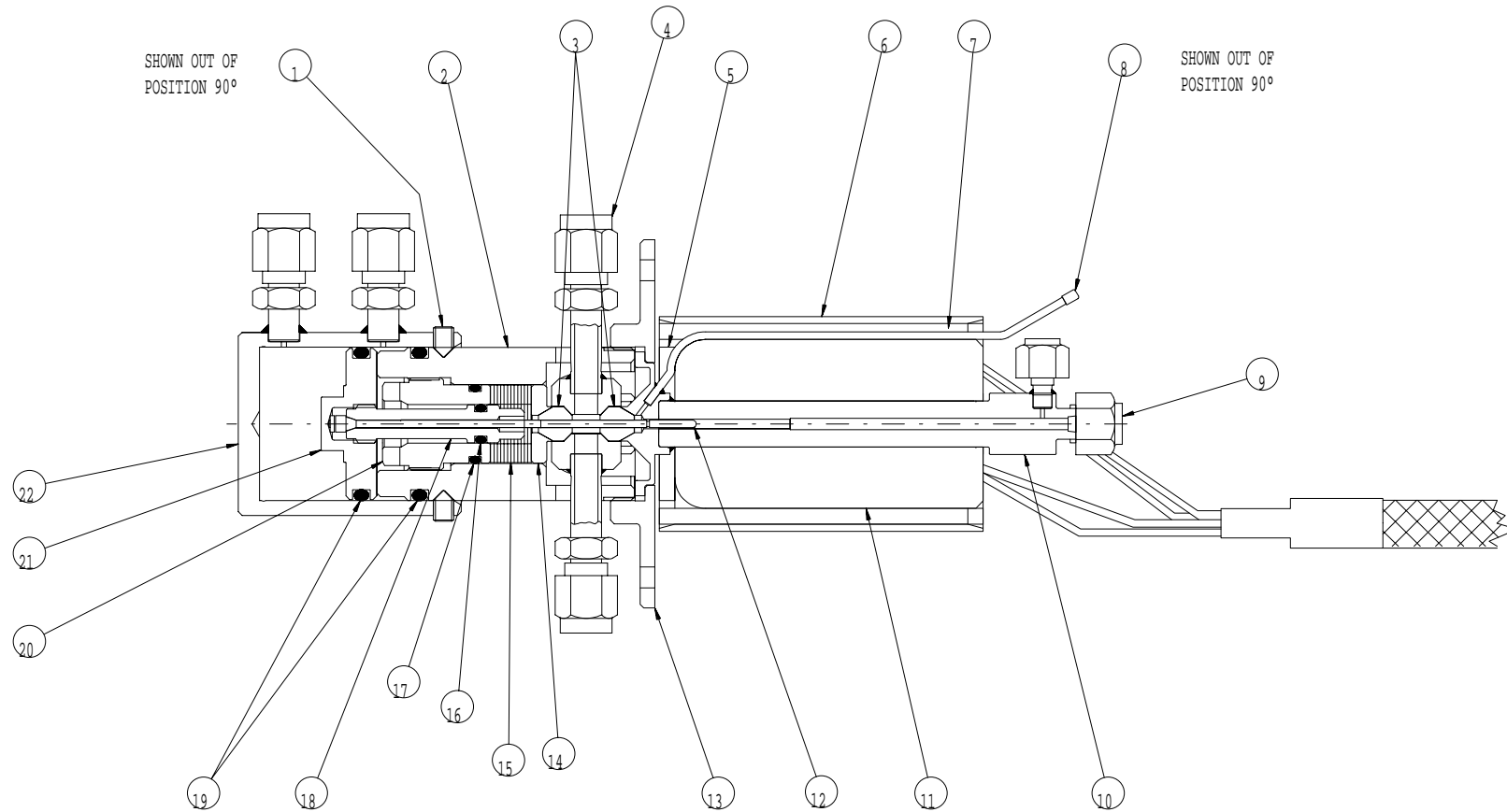
Model 791 MLI V

- Features & Benefits
 - Compact, all stainless construction, minimal fasteners/tools required.
 - Easy assembly and service.
 - Explosion Proof Heater assembly, one part number for NEC, Cenelec, CSA, etc. Dual voltage design.
 - One design replaces five different valve versions. Minimizes spare part stocking requirements.
 - Easily retrofit to previous Process Analytics and MAT valve installations.

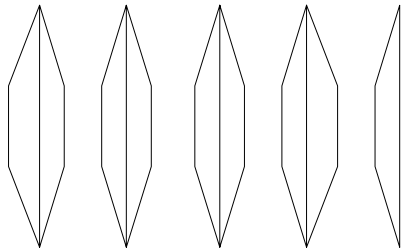
Model 791 MLIV

- Test Results
 - Over 1.5 years of Lab testing prior to Beta
 - Life tests on pure Hexane
 - 200°C Vaporizer Temperature
 - 500 PSI /34.5 bar Sample Pressure
 - Over 134,000 cycles before seal wear affected analysis. (Double inject)
 - Effective vaporization through C28 on Simulated Distillation analysis.
 - Successful installations since 1995

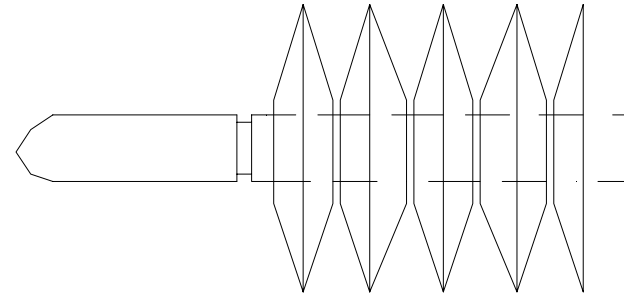
Model 791 MLIV



Model 791 MLIV

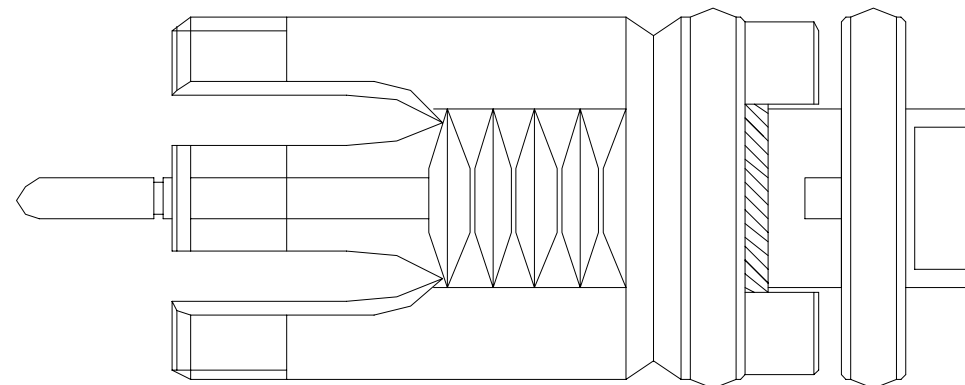


x9 off Belleville Washers



Washers on the Valve Stem

The Valve Stem assembled in body of LSV. Note orientation of Belleville washers.



Model 791 MLIV

- Assembly Drawing Legend

- | | |
|-------------------------|------------------------------|
| 1. SCREW - SET (2) | 14. REAR VALVE SEAT |
| 2. BODY | 15. SPRINGS - BELLEVILLE (9) |
| 3. SEAL (2) | 16. O-RING |
| 4. SAMPLE CHAMBER | 17. O-RING |
| 5. INSULATION | 18. ROD - PISTON |
| 6. TUBE - RETAINER | 19. O-RING (2) |
| 7. INSULATION | 20. SLEEVE - ADJUSTING |
| 8. CAP - PROTECTIVE | 21. PISTON |
| 9. NUT - 1/8 TUBE | 22. CYLINDER - ACTUATOR |
| 10. CHAMBER - VAPORIZER | |
| 11. ASSY HEATER | |
| 12. ASSY STEM - SAMPLE | |
| 13. FLANGE - THERMAL | |

Model 791 MLI V

- **Specifications**

- **Type:**
2 Position, Linear, Piston Actuated
- **Actuation:**
20 to 40 pig Air/Inert Carrier (1.4 to 2.8 bar)
1/8 tube inlet/outlet connections
- **Material:**
Sample Chamber: 316 SS, Hastelloy C and Monel optional
Stem: 316 SS standard
Hastelloy C and Monel optional
Body and balance: 303 SS
O-Rings: Viton (No contact with sample)

Model 791 MLI V

- **Specifications (cont.)**
 - **Sample Size:**
Blank, 0.035, 0.125, 0.25, 0.5 (0.0625in dia. stem)
1.0,2.0, 5.0 ml (0.125 dia. stem)
 - **Seal Material:**
PTFE (Teflon), Rulon AR, Rulon J (std.), PFA Teflon,
PTFE Glass Filled 15%, PTFE Mica Filled, Rulon 488
 - **Sample Pressure:**
2 to 435 psig (0.1 to 30 bar), 1/8 tube sample connections
 - **Chromatographic Connections:**
Column: 1/8 Tube, Vespel ferrule
Splitter: 1/16 Tube
Carrier: Integral 1/16 SS Tubing
 - **Manual (Syringe) Inject Septum Kit Available**

Model 791 MLI V

- **Specifications (cont.)**
 - Vaporizer Heater:
 - Maximum Temp: 280°C (T2), 330°C (~T1) with optional cooling
 - Minimum Temp : Chromatographic oven
 - Aluminum Block, Dual 70W Heaters, 115/230 VAC
NEC, CSA, Cenelec: EEx de IIB+H2 T2-6
400 ohm RTD probe.
 - Type K over temp thermocouple
 - Vaporizer : Deactivated 316SS, Integral splitter

Model 791 LSV Performance

- Following charts depict before and after performance of Model 791 LSV at a customer installation.
 - Top chart compares calibration response factors with old and new valve. Note calibration cycle extended to five days from two.
 - Lower chart shows lost production time for this analyzer before and after.

