

ALTERNATIVE  
FUEL SYSTEMS

**Prins**

**COMPRESSED  
NATURAL GAS**

**VSI CNG**

*Vapour Sequential Injection®*



*Quality, innovation and customer care, it's in our nature*



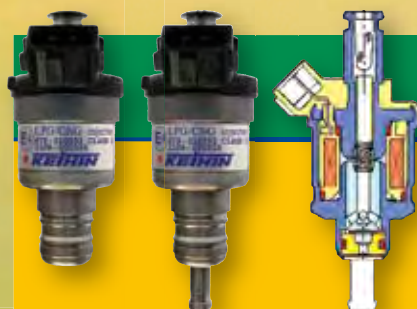
## VSI - CNG

- VSI-CNG: **V**apour **S**equential **I**njection - **C**ompressed **N**atural **G**as
- Fully integrated "master – slave" management system
- EOBD compatible (no signal emulation required)
- System diagnostics by monitoring vital signals and components
- System communication via CAN-bus prepared
- R110 – ISO15500 homologated
- Corrosion protected
- Meets OEM quality levels and standards



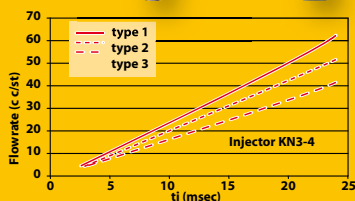
## Keihin / Prins CNG Pressure Regulator

- Precision built 'Single Stage' regulator developed in close cooperation with PRINS and KEIHIN
- Based on OEM technology, quality and standards
- Integrated relief valve
- Small pressure drop level equivalent to a two stage regulator
- Manifold reference function
- System pressure is not affected by tank pressure
- Performance at cold temperature is identical as at normal temperature
- Optional in-line electrical lock-off valve. Wide range of connections possible at the valve inlet



## Keihin OEM injector

- Developed in cooperation with Prins by Keihin Corp. Japan, one of the world's leading injector manufacturer, ensuring quality and reliability
- Excellent linear flow rate (LFR = linear behaviour from minimum to maximum flow)
- Linear from 2,5 ms
- Model range (6 different sizes) available to cater for small and large engine displacement
- OEM quality injectors, performance and long durability guaranteed (290 million cycles)



## Injector rail

- Uncomplicated fitting
- Assembled and 100% leak tested at factory prior to despatch
- 2, 3, 4, 5 and 6 cylinder assemblies



## Filter unit

- Compact lightweight design with single or dual outlets
- 100% tested after assembly
- Fitted with 10-micron ( $\beta_{10} > 75$ ) dry gas filter, protecting the fine tolerance of the injectors, from pollutants in the gas
- Combined gas temperature and pressure sensor



## VSI ECM

- ECM injector driver capability up to 10 cylinders
- Injector drivers based on "closed loop peak & hold current control"
- Injector diagnostics constant monitoring:
  - No load
  - Overload
  - Driver temperature
  - Short circuit
- Diagnostics, service and parameter load software operates on Windows 98, 2000, XP and Vista platforms
- Strategy functions for emission optimisation
- CAN-controller (2.0b) communication possible with OEM CAN-bus
- Electronic components are homologated (R10)
- R67-01 and R110 homologated
- Complete wiring loom colour coded, with text and numbering to ensure simple and efficient installation. All modules, actuators/sensors are equipped with connectors



## Fuel selector switch and manometer

- Small and compact design suits all dashboards
- Fuel select: via smart touch control, informs operator of tank contents, audible buzzer to alert low level switching or fault codes, illuminated fault code warning with LED
- Manometer in IP54 housing, with analogue reading and analogue output
- Waterproof manometer with connector



## Prins Timing Optimizer

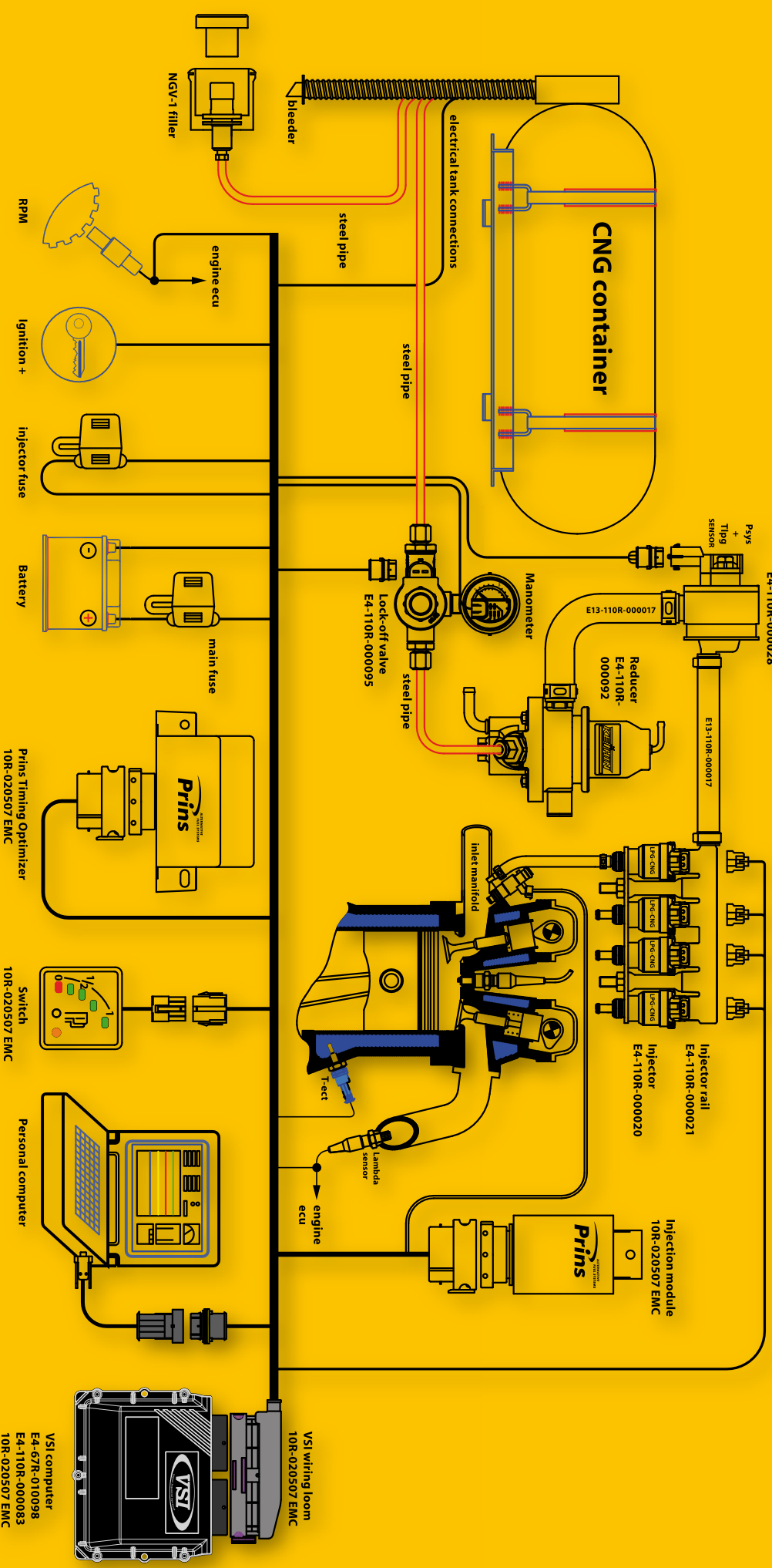
- Universal for both crankshaft sensor types (Hall and inductive)
- Possible for 36, 40 or 60 toothed crank wheels
- DTC trip history, diagnosis by VSI interface cable
- RPM out for VSI ECU



## Tank steel & composite

- Steel cylindrical CNG tanks available
- Lightweight composite cylindrical tanks available
- Manual or electric tank lock-off valve
- Standard ISO 11439

# Layout CNG system



VSI computer  
E4-67R-010098  
E4-110R-000083  
10R-020507 EMC