

# Integrado sistema de GNC

## CNG System Components



### Control panel

#### Intergrated CNG filling panel.

- Pressure gauge: Display CNG cylinder pressure.
- Filling valve: NGV1 or NGV2 fast filling.
- Filling shut-off valve: Shut off the CNG after filling.
- Venting valve: When system maintenance, exhaust gas empty from the piping system.



NGV

Plug in

### Filling Valve

#### Filling CNG to cylinder, including the check valve.

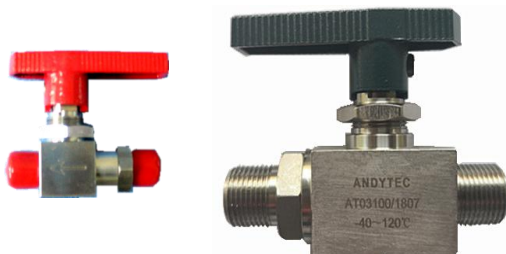
- Working pressure: 20 MPa(200bar).
- Working temperature:  $-40^{\circ}\text{C} \sim +120^{\circ}\text{C}$ .
- Working media: Natural gas.
- Two options: NGV1 & NGV2.



### Overflow Protection Valve.

When CNG system leaks in excess, it can automatically shut off gas supply to achieve safety and protection.

- Rated working pressure: 20 MPa(200bar).
- Working temperature:  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ .
- Working media: Natural gas.
- Rated shut off value:  $80+7\text{Nm}^3/\text{h}$ .
- No need to have daily maintenance and manual operation.



### High Pressure Shut-off Valve(Ball Valve)

#### Manually open or shut off the CNG supplyment.

- working pressure: 20 MPa(200bar).
- Working temperature:  $-40^{\circ}\text{C} \sim +120^{\circ}\text{C}$ .
- Working media: Natural gas.



### High Pressure Gauge

Indicates the cylinder pressure.

- Range: 0 - 40 MPa(400bar)
- Accuracy: 2.5 grade.



### Check Valve(One way)

It is used only as the pathway when filling CNG to Cylinder. The pathway is automatically cut off during natural gas supply.

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Pressure display



Pressure sensor

### Pressure display & Pressure sensor

Display the remaining gas pressure of CNG cylinder on the dashboard. Light and sound alarms can prompt drivers to refill natural gas in time.

- Range: 0-30.0MPa.
- The display rated working voltage: DC24V.
- Pressure sensor rated working voltage: DC5V.
- Pressure display accuracy:  $\pm 1$ MPa.
- Working temperature:  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ .
- Green light : Normal working voltage.
- Yellow light:  $\leq 3$  MPa, light and sound prompt the driver to refilling.
- Red light:  $\leq 1$  MPa, the alarm light, light and sound prompt driver that the engine can not work normally.



### High pressure filter

Filter the particles and impurities in the CNG .

- Working pressure: 20 MPa(200bar).
- Working temperature:  $-40^{\circ}\text{C} \sim +120^{\circ}\text{C}$ .
- Working media: Natural gas.
- Filtration accuracy:  $20 \sim 30\mu$ .
- Blasting test pressure: 100 MPa.



### High pressure precise filter

Filter the particles and impurities in the CNG to protect the high pressure solenoid valve and decompressor.

- Working pressure: 20 MPa(200bar).
- Working temperature:  $-40^{\circ}\text{C} \sim +120^{\circ}\text{C}$ .
- Working media: Natural gas.
- Filtration accuracy:  $0.3\mu$ .



### Low pressure filter

Filter impurities and water of the NG to prevent blocking the nozzle of the engine

- Max working pressure: 3.5 MPa.
- Rated volume: More than  $90\text{Nm}^3/\text{h}$ .
- Filtration accuracy:  $0.3\mu$ .
- Working temperature:  $-40^{\circ}\text{C} \sim +120^{\circ}\text{C}$ .
- Working media: Natural gas.

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## CNG System Components



### CNG lok fittings

- Customized **Male & Female, 90° , T & Cross, plug and nuts** connectors for **6mm、8mm or 12mm** tube.
- Common thread size: **1/4" NPT, 9/16" UNF.**
- Working pressure: **20MPa.**
- Working temperature: **-40°C~+85°C.**
- Working media: **Natural gas.**
- Certificate: **ISO15500.**

### High pressure stainless steel tube

- Working pressure: **20MPa.**
- Tube size: **Φ6mm, Φ8mm & Φ12mm.**
- Working media: **Natural gas.**
- Working temperature: **-40°C~+85°C.**
- Certificate: **ISO15500.**

## ISO15500 CNG System Components Certification

Inspection Certificate

Form: /

Client: Andy-Tec Technology(Beijing) Co.,Ltd

Order: Shanghai

Order Date: 18 August 2008

Order Status: Complete

Issue Date: 18 July 2008

From: 18 August 2008

This certificate is issued to Andy-Tec Technology(Beijing) Co.,Ltd to certify that the undersigned inspector did at their request visit the works of Xinhua Zhongnang Industrial Zone, Beijing City, P.R.China for the purpose of inspecting the following scope of inspection.

1. Description

S/N	Part Name	Part Number	Batch	Qty	Service Condition	Test Method	Standard
1	Check Valve	AT0100	1807	3000	20MPa -40°C~+85°C	Hydrostatic strength Leakage Excess torque resistance Binding moment Control operation Leakage	ISO15500-3.6.2 ISO15500-3.6.3 ISO15500-2.7 ISO15500-2.8 ISO15500-3.6.4 ISO15500-4.6.2 ISO15500-4.6.3
2	Manual Valve	AT0300	1807	10000	20MPa -40°C~+85°C	Excess torque resistance Binding moment Control operation Leakage	ISO15500-2.7 ISO15500-2.8 ISO15500-4.6.4 ISO14489-10.12
3	CNG Refueling Receiver(Lok type)	AT0400	1807	3000	20MPa -40°C~+85°C	Leakage Abnormal noise Low and high temperatures Reception Test Reception full flow test Deflection	ISO14489-10.5.2 ISO14489-10.7 ISO14489-10.10.3 ISO14489-10.11.4 ISO14489-10.11.5.1 ISO14489-10.11.5.2

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3.3 Excess Torque Resistance Test

No.	Name	Type	Qty	Size(mm)	Rated Torque (Nm)	Air Leakage Test	Result	Standard
1	Check Valve	AT0100	1	0.8	200Nm	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 7
2	Manual Valve	AT0300	1	0.8	300Nm	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 7
3	Pressure Indicator	AT1100	1	804	500Nm	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 7
4	Excess Flow Valve	AT0400	1	0.8	300Nm	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 7
5	Filter	AT0200	1	0.8	100Nm	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 7
6	Filter	AT0200	1	0.8	100Nm	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 7
7	Fitting	AT0200	1	0.8	300Nm	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 7
8	Fitting	AT0300	1	0.8	300Nm	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 7
9	Fitting	AT0300	1	0.8	300Nm	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 7
10	Fitting	AT0400	1	0.8	300Nm	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 7

3.4 Binding Moment Test

No.	Name	Type	Qty	Size(mm)	Force/Weight (at 90°)	Leakage Test (Per each 30' with force of 100N)	Air Leakage Test	Result	Standard
1	Check Valve	AT0100	1	0.8	9N/15mm	0.5MPa/0.5MPa/2min	20°C / 0.5MPa/0.5MPa/2min	Accepted	ISO15500-2:2001 Clause 8

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3.5 Receiver Full Flow Test

No.	Name	Type	Qty	Test Cycle (20000 cycles, 100 cycles per 100 cycles and random of 10%)	Leakage at room temperature	Result	Standard
1	CNG Refueling Receiver(Lok type)	AT0400	1	10000	0.5MPa/0.5MPa/0.5MPa/2min	Accepted	ISO14489-10:2004 Clause 10.11.4
2	CNG Refueling Receiver(Lok type)	AT0400	1	10000	0.5MPa/0.5MPa/0.5MPa/2min	Accepted	ISO14489-10:2004 Clause 10.11.4

3.6 Deflection

No.	Name	Type	Qty	Turning Torque (150% of assembly torque)	Leakage Test at 150% of assembly torque	Leakage Test at high and low temperature	Hydrostatic Test	Result	Standard
1	CNG Refueling Receiver(Lok type)	AT0400	1	0.8-12.5Nm	0.5MPa/0.5MPa/0.5MPa/2min	+40°C	1000Pa/30min	Accepted	ISO14489-10:2004 Clause 10.14
2	CNG Refueling Receiver(Lok type)	AT0400	1	0.8-12.5Nm	0.5MPa/0.5MPa/0.5MPa/2min	+40°C	1000Pa/30min	Accepted	ISO14489-10:2004 Clause 10.14

Notes:

- The above test result was based on the samples provided by the manufacturer.
- It should be noted that these items do not necessarily comply with the requirements of the statutory authority in the country of installation, and therefore users should confirm the acceptance from the appropriate and verify suitability before placing in service.
- The certificate material cannot be used on closed shop/other institutions.

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