



DATA SHEET
ZENITH +VM A3@HPSG

Rev. 00

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CNG Pressure Regulator “ZENITH”

+

**Solenoid Valve “VM A3 BANJO”
with High Pressure Sensor / Gauge**

DATA SHEET

0. Main

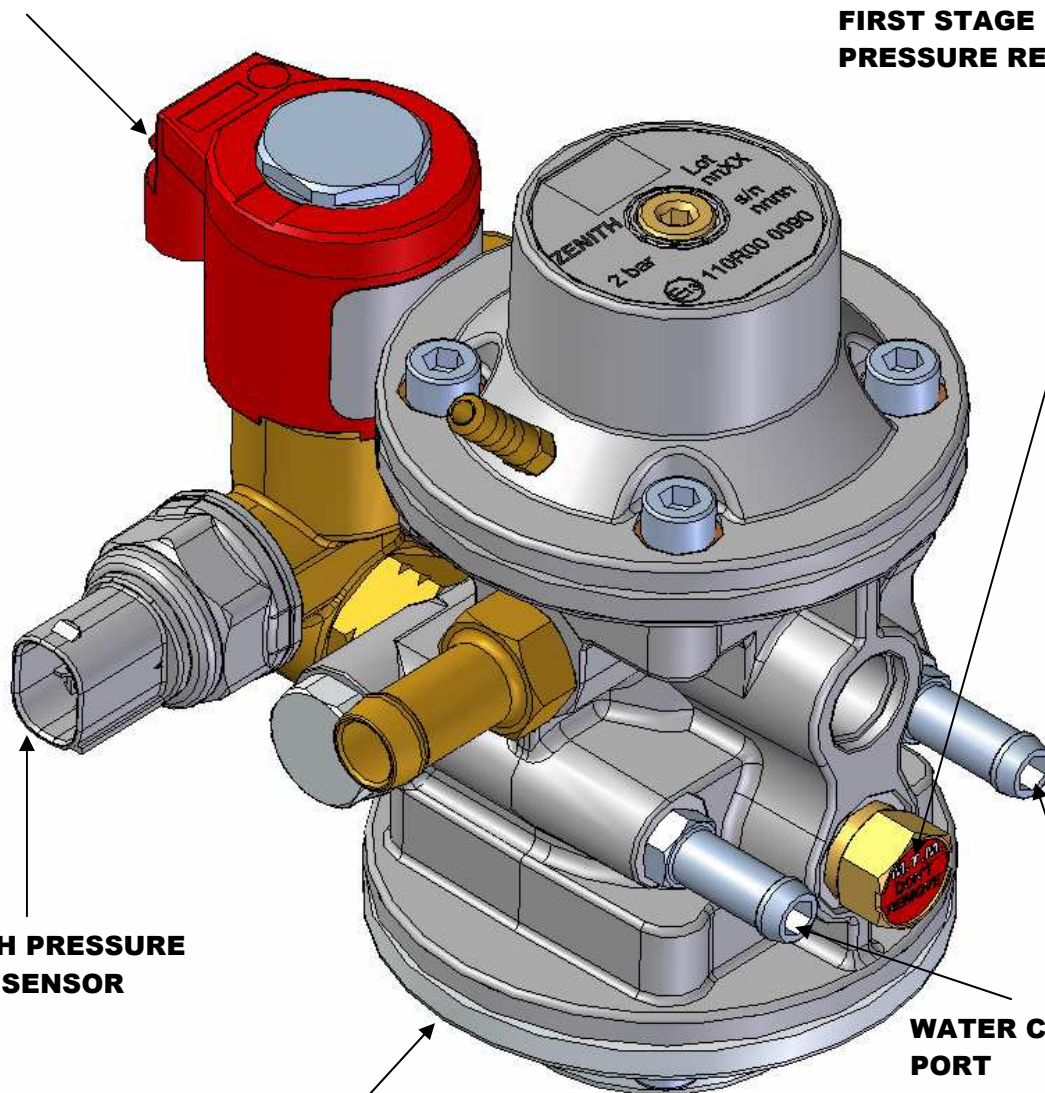
**HIGH PRESSURE
SOLENOID VALVE
(VM A3 BANJO)**

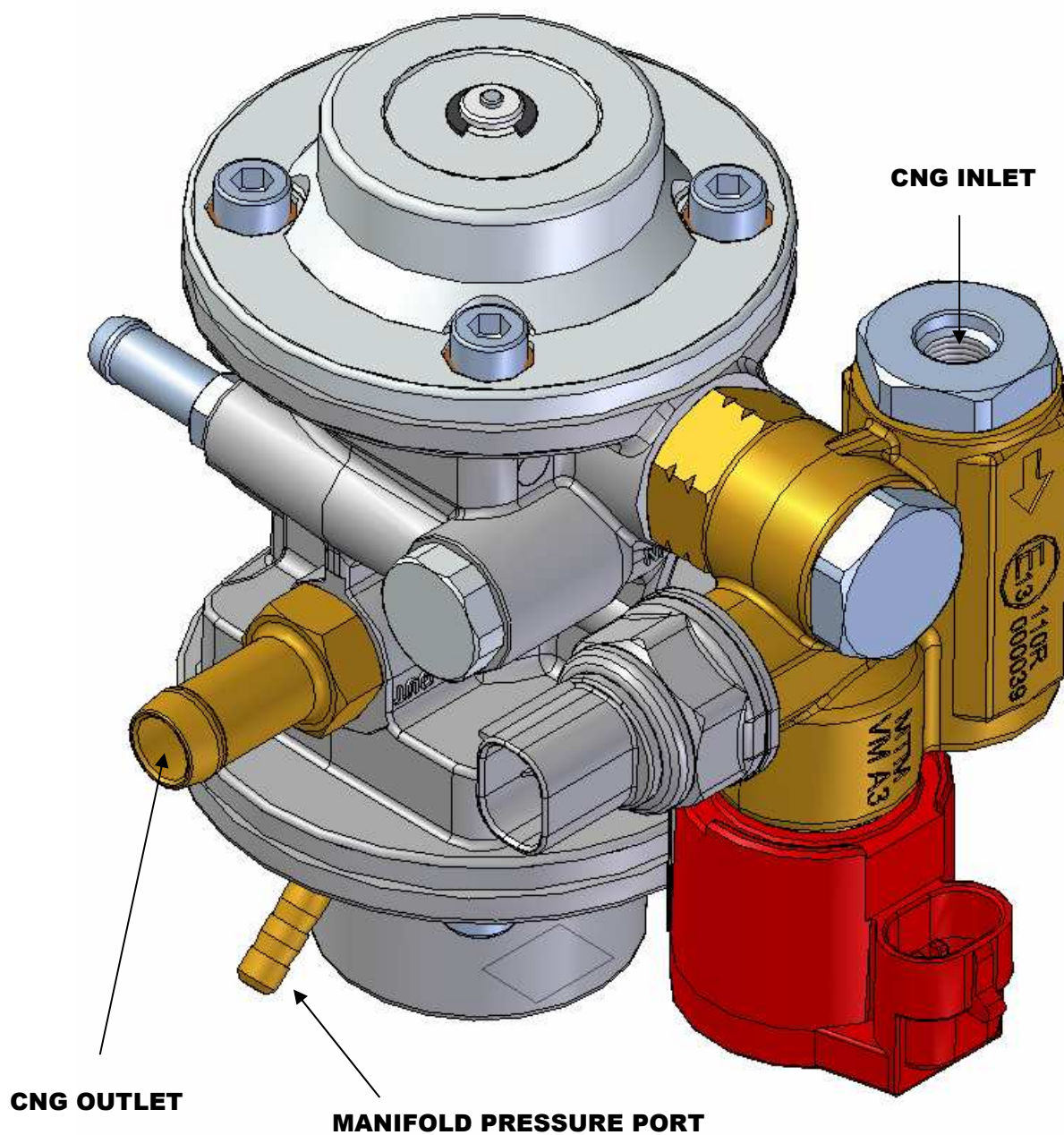
**FIRST STAGE
PRESSURE RELIEF DEVICE**

**HIGH PRESSURE
SENSOR**

**PRESSURE REGULATOR
(ZENITH)**

**WATER COOLANT
PORT**







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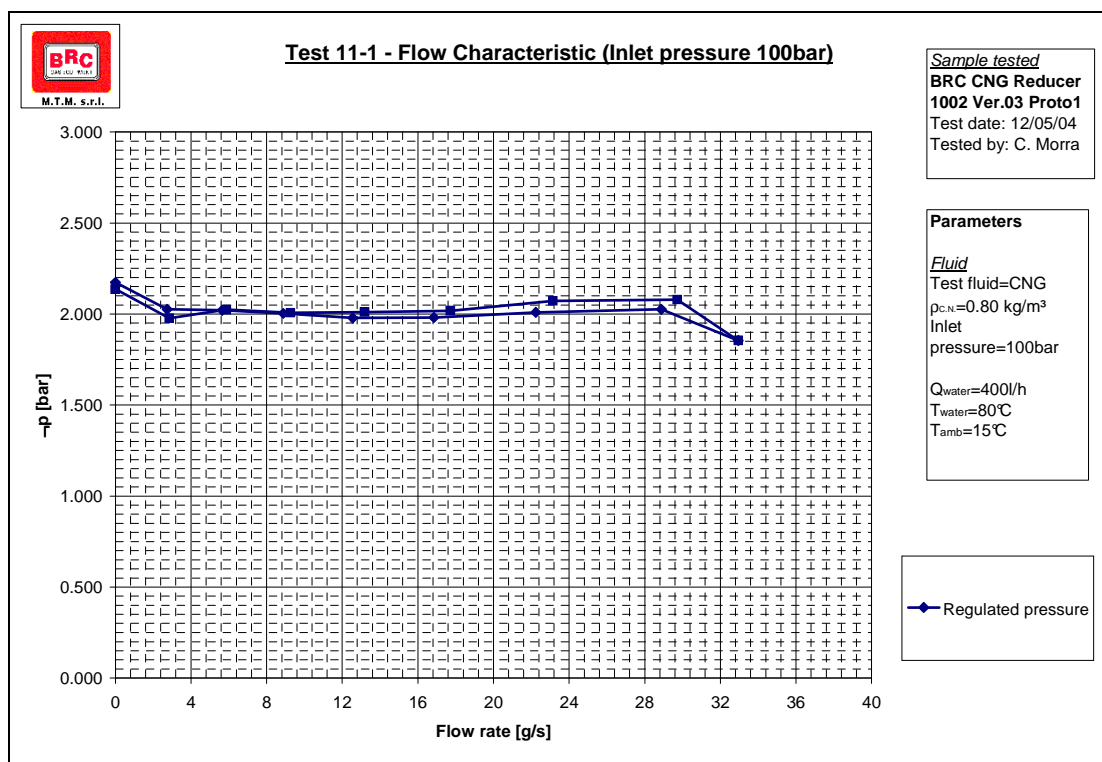
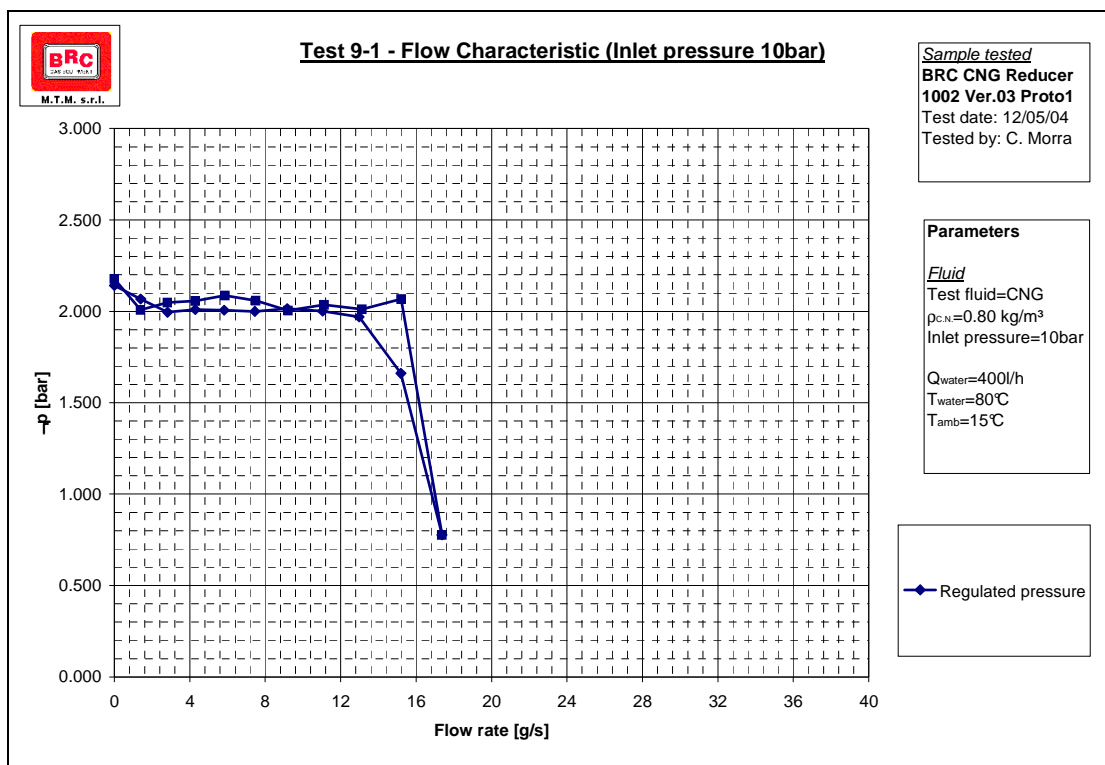
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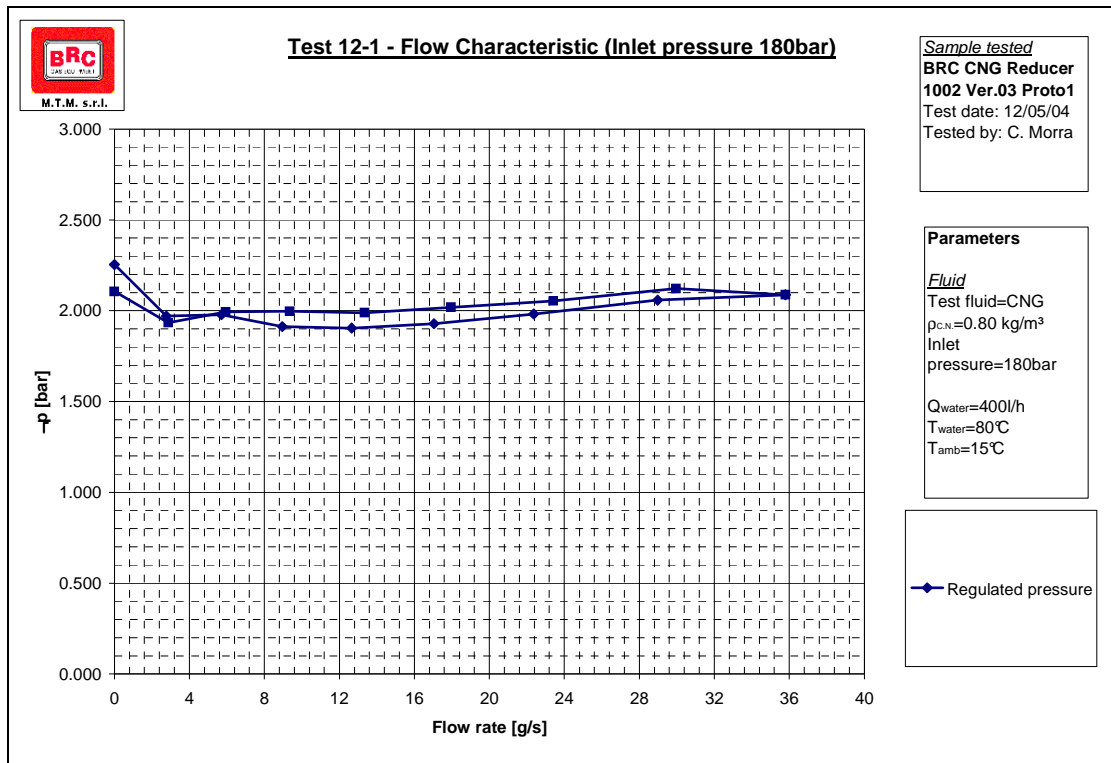
1 BRC CNG Pressure Regulator ZENITH

1.1 General Characteristic

ITEM		DETAIL	Ref.
Environment	Outside	Muddy water, dust, oil mist	
	Inside	CNG, Compressor oil, water, isopropyl alcohol, methane, nitrogen	
	Function assured temperature	-40°C to 120°C	R110 ISO15500
	Corrosion	144 h salt spray	R110 ISO15500
	Vibration	5g from 40 to 400 Hz	
	Endurance	600000 Cycles	
Number of Stage		2	
Working pressure		26 MPa (Class 0)	R110
Minimum Inlet pressure		1 MPa @ 12 g/s	Medium: CNG
Burst pressure		> 100 MPa	ISO15500
First Stage	Maximum Working Pressure	1,5 MPa	R110
	Nominal Operating Pressure	0,55 MPa	
	Pressure Relief Valve Setting	1,4 ± 0,2 MPa	
	Burst Pressure	> 3 MPa	R110
Second Stage	Maximum Working Pressure	0,5 MPa	R110
	Operating Pressure	0,2 MPa	Adjustable from 0,16MPa to 0,25MPa
	Burst pressure	> 1 MPa	R110
Water Jacket	Heat exchange medium	Water with ethylene glycole	
	Maximum working pressure	200 kPa	
	Rated Flow	400 l/h @ Δp = 10kPa	Medium: Water
Leakage	Internal air thightness	< 15 cm³/h	Medium: Air
	External air thightness	< 15 cm³/h	R110
Mass		0,98 kg	
Type approvals / Certifications		110R00 0090 / ISO 15500	

All the test are performed with CNG ($\rho=0,8\text{kg/m}^3$)





2. BRC CNG Solenoid Valve VM A3 BANJO

2.1 General Characteristic

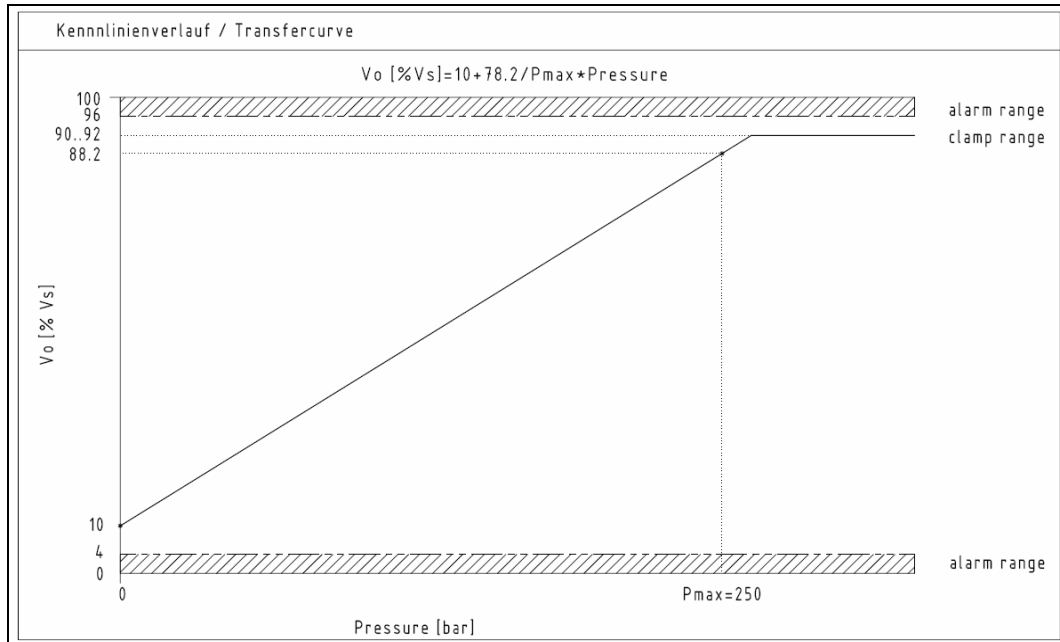
	ITEM	DETAIL	Ref.
Environment	Outside	Muddy water, dust, oil mist	
	Inside	CNG, Compressor oil, water, isopropyl alcohol, methane, nitrogen	
	Function assured temperature	-40°C to 120°C	R110 ISO15500
	Corrosion	144 h salt spray	R110 ISO15500
	Vibration	5g from 40 to 400 Hz	
	Endurance	250000 Cycles	
	Working pressure	26 MPa (Class 0)	R110
	Service pressure	20 MPa	ISO15500
	Burst pressure	> 100 MPa	ISO15500
Electrical	Minimum opening voltage	6 V	ISO15500
	Opening Current	< 1 A @ 200 bar	
	Max voltage @ 120°C	18 V	
	Power	16 W @ 12VDC	
	Coil resistance	9,3 $\Omega \pm 7\%$ at 20°C for 12VDC coil	
	Socket	AMP Superseal	
Leakage	Internal air thightness	< 15 cm ³ /h	Medium: Air
	External air thightness	< 15 cm ³ /h	R110
Filter	Filtration Size	25 μ m	
	Efficiency	93%	
	Replacement	50.000 km Recommended	
	Mass	0,6 kg	
	Type approvals / Certifications	110R00 0039 / ISO 15500	

3. CNG High Pressure Sensor

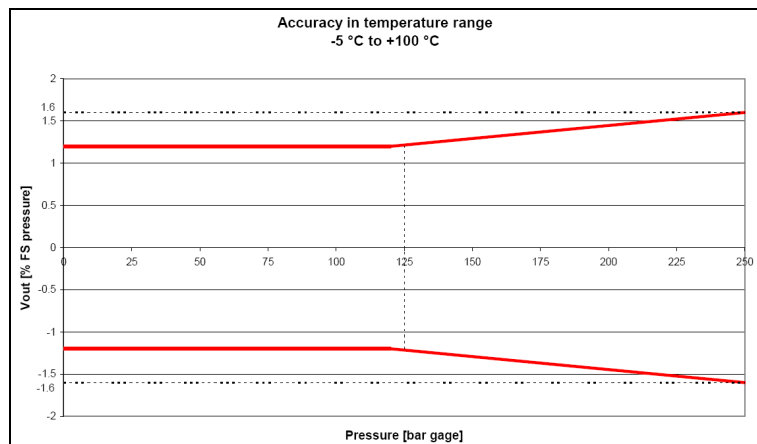
3.1 General Characteristic

ITEM		DETAIL
Environment	Outside	Muddy water, dust, oil mist
	Inside	CNG, Compressor oil, water, isopropyl alcohol, methane, nitrogen
	Function assured temperature	-40°C to 135°C
	Storage temperature	-40°C to 145°C
	Corrosion	240 h salt spray
	Vibration	5g from 10Hz to 1000Hz
Working pressure range		0 – 25MPa
Burst pressure		> 65MPa
Classification pressure		25MPa (Class 0)
Electrical	Nominal supply voltage	5 V
	Pressure sensor output	0 – 5 V
	Electrical connection	3 wire IP67
	Socket	AMP 2-967642-1 Type B
External air tightness		< 0,1 cm ³ /min
Mass		≈ 32 g
Type approvals/ Certifications		110R 000096/ ISO 15500

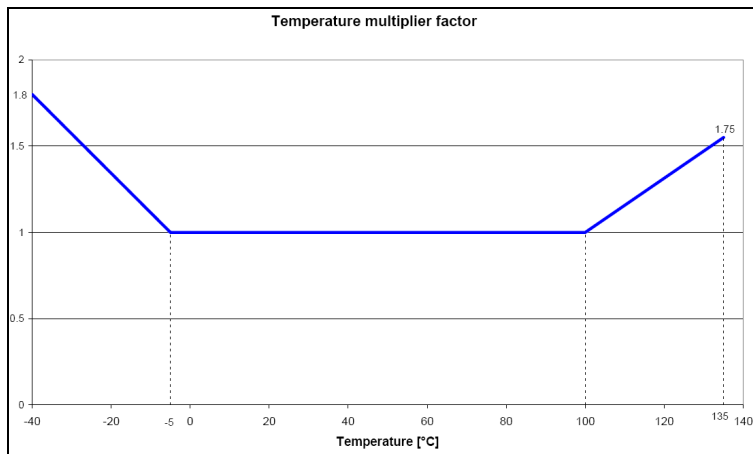
3.2 Sensor Characteristic



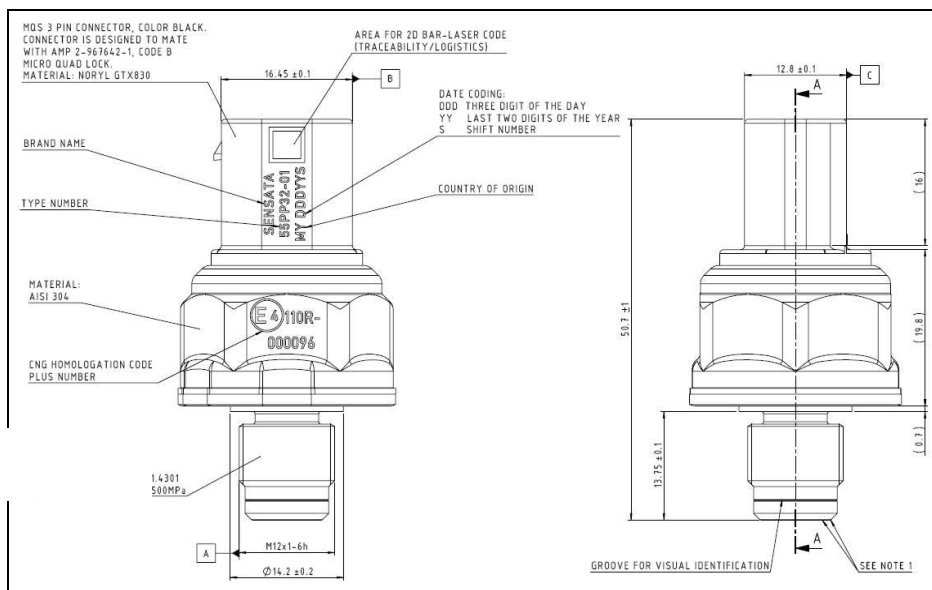
3.3 Sensor Accuracy



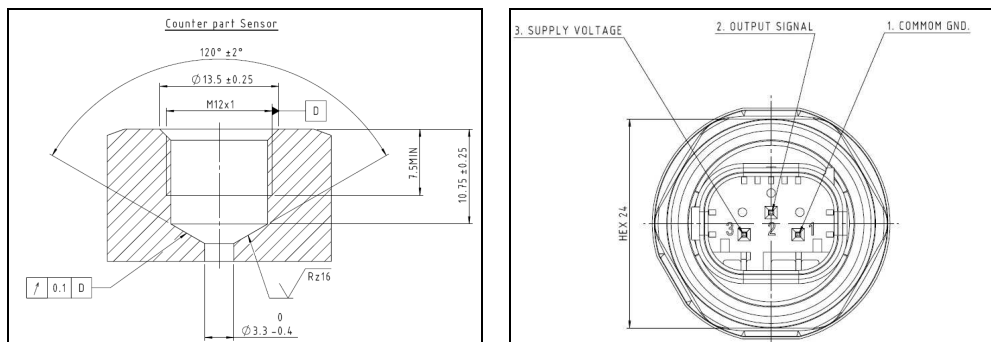
3.4 Outside the temperature range (-5°C +100°C) the accuracy has to be multiplied with the factor below



3.5 Main Dimension

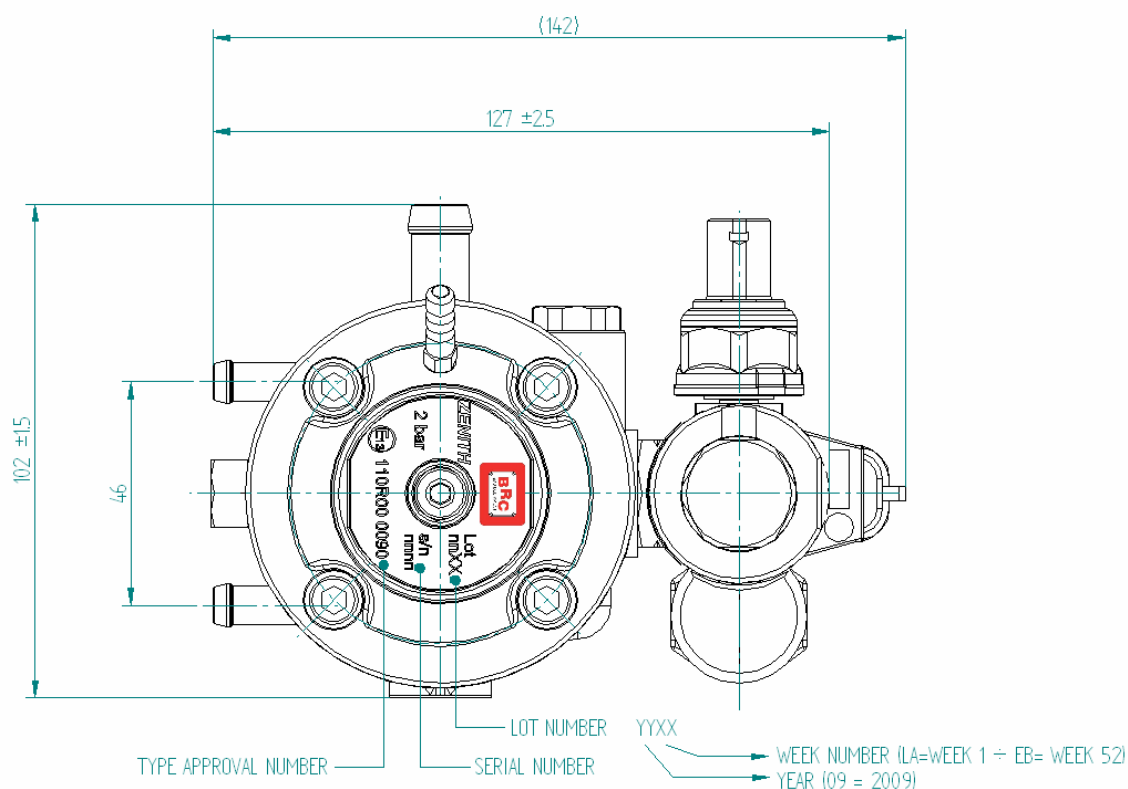


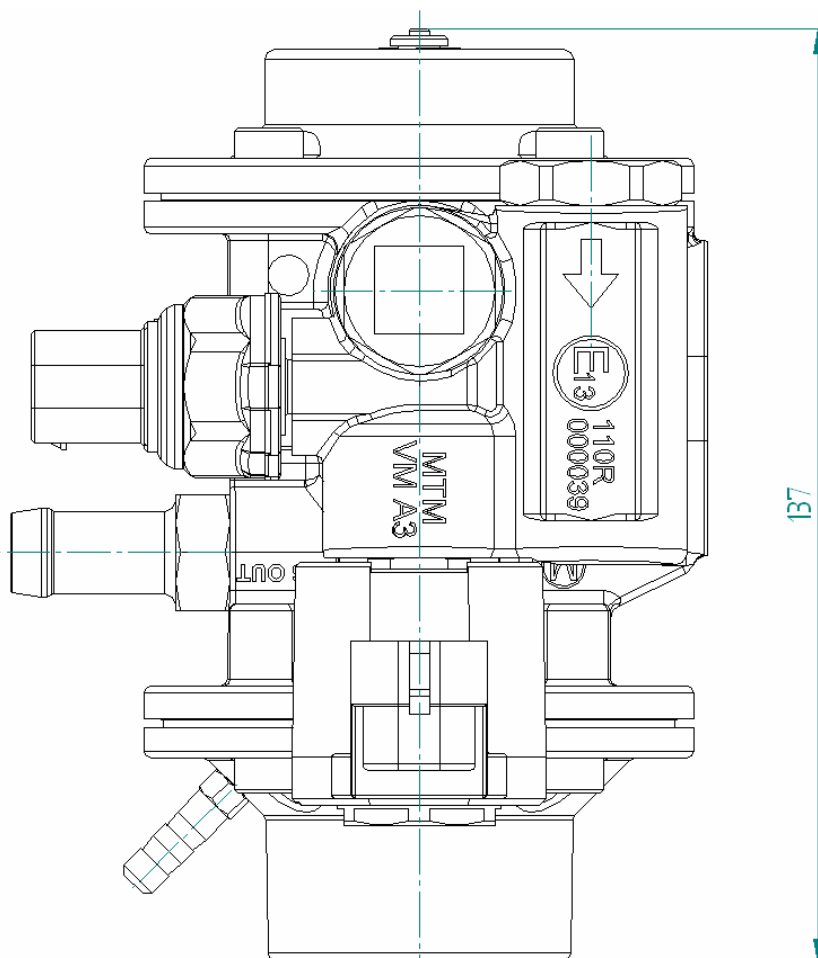
3.6 Sensor Interface



4. BRC CNG ZENITH + VM A3 “BANJO”

ITEM	DETAIL	Ref.
Mass	1,6 kg	
Mounting Thread	2 x M8 Screw	
Dimensions mm	102 x 142 x 137	
External Leakage	< 15 cm ³ /h	Medium: Helium





Mounting Characteristics			
Port	Size	Pipe	Installation Torque
Mouting Thread	2 x M8	-	15 ± 1,5 Nm
Solenoid Valve Fixed Screw	M 12 x 1	-	30 ± 3 Nm
High Pressure Sensor	M12x1	-	35 ± 3,5 Nm
CNG Inlet	M12 x 1 1/4" NPT JOINT with O-Ring Seat	6 x 1 Steel pipe	30 ₀ ⁺¹⁰ Nm / /
CNG Outlet	Sharp edge fitting for 12mm internal diameter hose	Specific BRC rubber hose 12 x 19 with clamp	-
Water Coolant Port	Sharp edge fitting for 8mm internal diameter hose	Specific BRC rubber hose 8 x 15 with clamp	-
MAP Port	Sharp edge fitting for 5 mm internal diameter hose	Specific BRC rubber hose 5 x 10.5 with clamp	-