A. Proposal Details

Part - 1

Organization Type: Industry/Industry Association

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Part - 2

5. Proposed title of Standard	Pressure Regulator of flowrates more than 2.5 scmh and inlet pressure up to 4 bar
6. Aspect	Product Specification
7. Define subject of standard	This document specifies the product requirements for Pressure Regulators for use with natural gas (Specific Gravity up to 0.6) at gas flow rates more than 2.5 scmh and maximum inlet pressure of 4 bar (g).
8. Most Relevant Technical Department	PGD (Production and General Engineering Department)

Part - 3

9. Scope of proposed standard	This document specifies the product requirements for Pressure Regulators for use with natural gas (Specific Gravity up to 0.6) at gas flow rates more than 2.5 scmh and maximum inlet pressure of 4 bar (g).
10. Purpose and Justification	At present, there are more than one million domestic customers who are being supplied Piped Natural Gas (PNG) by various City Gas Distribution (CGD) entities across the nation, and the customer base is expanding at a very rapid rate. The subject pressure regulators are installed in the premises of societies. It is proposed to formulate an Indian technical standard to cater to the subject material, which is directly affecting millions of people.
11. Likely users of standards and their inputs	City Gas Distribution companies supplying Piped Natural Gas (PNG), manufacturers of pressure regulators
12. Any related standards/series of standard/system standard required to make this subject standard complete	EN 88-2
13. When the final standard would be required	31-03-2025
14. Any specific problem being faced without this standard	The aim of formulating this standard is to ensure safety standards for products which are installed in the premises of societies of domestic customers using Piped Natural Gas (PNG) and is affecting millions of people across the nation.
15. Bearing with Govt legislation regulation, etc	PNGRB Technical Standards & Specifications including Safety Standards for City or Local Natural Gas Distribution Networks (also known as T4S)
16. Name and address of manufacturers/ implementing/ industries/ purchasing organization /component supplier/ raw material supplier, if any	Users: City Gas Distribution (CGD) entities across the country. Manufacturers: Kabsons (Hyderabad), Greenglobe (Mumbai), Vanaz (Pune), Mesura Nirmal (Vadodara), Pietro (Italy), etc.

17. Status of the industry in the country	The City Gas Distribution (CGD) entities across the country are using subject product as per their respective technical specifications and are procuring the same from manufacturers namely Kabsons (Hyderabad), Greenglobe (Mumbai), Vanaz (Pune), Mesura Nirmal (Vadodara), Pietro (Italy), etc.
18. Availability of test facilities in the country	1) Fluid Control Research Institute (FCRI), Palakkad (Kerala state), 2) Yadav Measurements, (Udaipur)
19. Whether related to variety reduction, export, health, safety consumer protection, mass consumption, energy conservation, technology transfer, technology upgradation, protection of environment & other National priorities	Safety consumer protection, mass consumption
20. Whether subject requires consideration to be given to women/girl issues in line with Sustainable Goal 5 of the UN. If so, whether the issues are proposed to be addressed suitably in the proposed standard	Not applicable
21. Relevant supportive document (download docs)	1. Attachment
22. R & D work done in india	Regulator developed by CGD entities in consultation with manufacturers
23. Any foreign collaboration (give details)	Nil
24. Liaison with any organisation(s)	Nil
25.A. Preparatory work	Outline attached and draft can be prepared
25.B. Preparatory work (Details)	Pressure Regulator of flowrates more than 2.5 scmh and inlet pressure up to 4 bar Attachment
26. Whether this project can be funded by your organization	To be discussed
27. Whether your organisation would be interested to opt for BIS Standard Mark once the standard is published?	Yes
28. Any Other Attachment (extra)	

B. Action Logs

Technical Specification for Pressure Regulators, for use with maximum inlet pressures up to 4 bar (g).

1. SCOPE

This specification specifies the requirements for the construction, performance and marking of medium pressure service regulators to operate with a maximum inlet pressure of 4 bar (g) & nominal outlet pressure of 100 mbar (g) for use with natural gas, having specific gravity of 0.61. All pressures mentioned in this specification are Gauge pressures.

2. REFERENCE

Unless otherwise specified, the latest editions of the standards mentioned herein this specification, including all addenda and revisions, shall apply. All pressures mentioned in this specification are gauge pressures. The vendor shall furnish (along with the technical bid) a copy of the approval documents, certificates (in English language only) for each of the offered model, for compliance to the requirements of EN 88-2 standard.

3. PERFORMANCE REQUIREMENT AND STANDARD FEATURES

a) Satisfactory operation over an inlet pressure range of 4 bar (maximum) to 0.5 bar (minimum), using a single orifice and nominal outlet pressure will be 100 mbar.

b) Inlet / Outlet connection (to be specified by the vendor) should be approved by buyer organization and should be of screwed type as per ISO 7 Part 1: 1994 or any other type of connection (only with prior approval of buyer organization).

c) Suitable for use with natural gas at nominal specific gravity of 0.6 & operating in ambient temperature of up to 45 ^{0}C.

d) Over Pressure Shut off (OPSO) device to protect against downstream over pressure preset to 160 +/- 5 mbar and creep relief valve to protect against downstream over pressure at low flows or in the event of valve seat malfunction, preset to 140 +/- 5 mbar.

e) Under Pressure Shut off (UPSO) device to protect against downstream under pressure with a pressure setting range 40 mbar to 65 mbar.

f) Once the slam shut off device is activated, the regulator shall not reset automatically, but shall be reset manually.

g) The regulator shall be also capable of operating either in the vertical or horizontal plane & shall be constructed to be fully resistant to corrosion when installed in outdoor locations in the high temperature & humid environment of Mumbai.

Variant design (if any) offered by the party should be duly approved by buyer organization. For specific requirements, refer Appendix A.

The buyer organization shall approve the regulator type & model to be supplied & full technical details shall be supplied along with the technical bid.

h) **In case the offered model of service regulator has not been supplied to buyer organization earlier, the bidder shall, at no additional cost to buyer organization, arrange to provide training program (covering the various aspects of operation, maintenance, troubleshooting, etc., of the offered model) to buyer organization's personnel, within a period of one month from date of receipt of the first lot of materials in buyer organization's stores.**

4. MARKING & PACKAGING

The regulator body shall be indelibly and clearly marked with the following details:

- Capacity of the regulator (6 scmh or 10 scmh or 25 scmh or 40 scmh or 65 scmh, or as the case may be)
- Inlet pressure range
- Outlet pressure range
- Regulation accuracy
- Direction of flow
- Name of the manufacturer and the name of the model
- Serial number of the regulator
- Month and year of manufacturing

Each regulator shall be sealed properly before dispatch, such that the factory setting cannot be changed on site. Each regulator (along with the instruction manual) is to be individually packed in a transparent plastic cover (of adequate thickness) to protect the regulator from ingress of dirt and water, and the same shall be packed in an individual box. The description of the contents of each of these boxes shall be clearly mentioned on each of the individual box. A set of these individual boxes (5-10 Nos., as the case may be) shall be packed in a larger box; and the description of the contents of the larger box shall also being clearly mentioned on the box. The quantity of the regulators in the larger box shall be such that the box can be easily handled and stored, and it does not get damaged during the same.

5. QUALITY ASSURANCE

The Supplier will provide details of their quality assurance procedures during the assembly of the units and for final inspection following testing.

The buyer organization reserves the right to visit the Supplier's facilities without prior notice and inspect test records and witness assembly and testing in progress.

6. GUARANTEE PERIOD

The regulator shall be guaranteed against malfunction and degradation through corrosion or faulty workmanship for a period of eighteen months from the date of delivery or twelve months from the date of commissioning. The buyer organization also reserves the right to charge the supplier all costs incurred by buyer organization for rectifying or replacing defective units within the guarantee period.

7. INSPECTION PLAN

i. Inspection will be carried out as per the Technical Specifications of buyer organization at the works of the manufacturer.

ii. Buyer organization's representative or third-party inspection agency appointed by buyer organization shall carry out inspection during manufacturing / final inspection at the works of the manufacturer.

iii. Vendor shall furnish all the material test certificates, internal test / inspection reports as per buyer organization's technical specifications & specified code for 100% material at the time of inspection of each supply lot of material.

iv. Review of Calibration certificates for all the measuring instruments at the time of inspection, i.e., used for checking and testing, along with the Master calibration certificate of the measuring instruments from which the instruments is calibrated.

v. All regulators should be wired up and sealed properly by the manufacturer after final inspection clearance and before dispatch. Regulators found in an unsealed condition will not be accepted at buyer organization's stores.

vi. Following is the Test Plan for a 6 scmh service regulator.

Sr. No.	Test Description	Sample Qty.	Acceptance Norm	Test Procedure / Remarks
1	Outlet pressure @ 4.0 bar (g) Inlet pressure & 12 scmh flow	10%	110 mbar (g) (± 5 % (g))	
2	Lock Up @ 4.0 bar (g) Inlet pressure & 12 scmh Flow	10%	≤ □125mbar (g) ± 5 mbar (g)	Gradual closing of outlet valve from above operating condition
3	Outlet Pressure @ 0.5 bar (g) Inlet pressure & 6 scmh Flow	10%	100 mbar (g) (+5, -20 mbar (g))	
4	Lock Up @ 0.5 bar (g) Inlet pressure & 6 scmh Flow	10%	≤ □125 mbar (g) ± 5 mbar (g)	Gradual closing of outlet valve from above operating condition
5	Relief Pressure @ inlet pressure 4 bar (g)	10%	140 mbar (g) ± 5 mbar (g)	By gradually applying pressure from external source to the outlet pipeline. Check relief valve operating pressure by connecting a rubber tube to regulator vent and immersing the tube in water. Continuous stream of bubbles indicates that the relief valve is functioning.
6	Over Pr. Shut off @ Inlet pressure 4 bar (g)	10%	160 mbar (g) ± 5 mbar (g)	By further increasing pressure from outside source to the outlet pipe line
7	Under Pr. Shut Off @ Inlet pressure 2 bar (g)	10%	40 to 65 mbar (g)	By closing the inlet valve and opening the outlet valve

Following is the Test Plan for a 10 scmh service regulator.

Sr. No.	Test Description	Sample Qty.	Acceptance Norm	Test Procedure / Remarks
1	Outlet pressure @ 4.0 bar (g) Inlet pressure & 20 scmh flow	10%	110 mbar (g) (± 5 % (g))	
2	Lock Up @ 4.0 bar (g) Inlet pressure & 20 scmh Flow	10%	≤ □125mbar (g) ± 5 mbar (g)	Gradual closing of outlet valve from above operating condition
3	Outlet Pressure @ 0.5 bar (g) Inlet pressure & 10 scmh Flow	10%	100 mbar (g) (+5, -20 mbar (g))	
4	Lock Up @ 0.5 bar (g) Inlet pressure & 10 scmh Flow	10%	≤ □125 mbar (g) ± 5 mbar (g)	Gradual closing of outlet valve from above operating condition
5	Relief Pressure @ inlet pressure 4 bar (g)	10%	140 mbar (g) ± 5 mbar (g)	By gradually applying pressure from external source to the outlet pipeline. Check relief valve operating pressure by connecting a rubber tube to regulator vent and immersing the tube in water. Continuous stream of bubbles indicates that the relief valve is functioning.
6	Over Pr. Shut off @ Inlet pressure 4 bar (g)	10%	160 mbar (g) ± 5 mbar (g)	By further increasing pressure from outside source to the outlet pipe line
7	Under Pr. Shut Off @ Inlet pressure 2 bar (g)	10%	40 to 65 mbar (g)	By closing the inlet valve and opening the outlet valve

Following is the Test Plan for a 25 scmh service regulator.

Sr. No.	Test Description	Sample Qty.	Acceptance Norm	Test Procedure / Remarks
1	Outlet pressure @ 4.0 bar (g) Inlet pressure & 50 scmh flow	10%	110 mbar (g) (± 5 % (g))	
2	Lock Up @ 4.0 bar (g) Inlet pressure & 50 scmh Flow	10%	≤ □125mbar (g) ± 5 mbar (g)	Gradual closing of outlet valve from above operating condition
3	Outlet Pressure @ 0.5 bar (g) Inlet pressure & 25 scmh Flow	10%	100 mbar (g) (+5, -20 mbar (g))	
4	Lock Up @ 0.5 bar (g) Inlet pressure & 25 scmh Flow	10%	≤ □125 mbar (g) ± 5 mbar (g)	Gradual closing of outlet valve from above operating condition
5	Relief Pressure @ inlet pressure 4 bar (g)	10%	140 mbar (g) ± 5 mbar (g)	By gradually applying pressure from external source to the outlet pipeline. Check relief valve operating pressure by connecting a rubber tube to regulator vent and immersing the tube in water. Continuous stream of bubbles indicates that the relief valve is functioning.
6	Over Pr. Shut off @ Inlet pressure 4 bar (g)	10%	160 mbar (g) ± 5 mbar (g)	By further increasing pressure from outside source to the outlet pipe line
7	Under Pr. Shut Off @ Inlet pressure 2 bar (g)	10%	40 to 65 mbar (g)	By closing the inlet valve and opening the outlet valve

Following is the Test Plan for a 40 scmh service regulator.

Sr. No.	Test Description	Sample Qty.	Acceptance Norm	Test Procedure / Remarks
1	Outlet pressure @ 4.0 bar (g) Inlet pressure & 80 scmh flow	10%	110 mbar (g) (± 5 % (g))	
2	Lock Up @ 4.0 bar (g) Inlet pressure & 80 scmh Flow	10%	≤ □125mbar (g) ± 5 mbar (g)	Gradual closing of outlet valve from above operating condition
3	Outlet Pressure @ 0.5 bar (g) Inlet pressure & 40 scmh Flow	10%	100 mbar (g) (+5, -20 mbar (g))	
4	Lock Up @ 0.5 bar (g) Inlet pressure & 40 scmh Flow	10%	≤ □125 mbar (g) ± 5 mbar (g)	Gradual closing of outlet valve from above operating condition
5	Relief Pressure @ inlet pressure 4 bar (g)	10%	140 mbar (g) ± 5 mbar (g)	By gradually applying pressure from external source to the outlet pipeline. Check relief valve operating pressure by connecting a rubber tube to regulator vent and immersing the tube in water. Continuous stream of bubbles indicates that the relief valve is functioning.
6	Over Pr. Shut off @ Inlet pressure 4 bar (g)	10%	160 mbar (g) ± 5 mbar (g)	By further increasing pressure from outside source to the outlet pipe line
7	Under Pr. Shut Off @ Inlet pressure 2 bar (g)	10%	40 to 65 mbar (g)	By closing the inlet valve and opening the outlet valve

Following is the Test Plan for a 65 scmh service regulator.

Sr. No.	Test Description	Sample Qty.	Acceptance Norm	Test Procedure / Remarks
1	Outlet pressure @ 4.0 bar (g) Inlet pressure & 130 scmh flow	10%	110 mbar (g) (± 5 % (g))	
2	Lock Up @ 4.0 bar (g) Inlet pressure & 130 scmh Flow	10%	≤ □125mbar (g) ± 5 mbar (g)	Gradual closing of outlet valve from above operating condition
3	Outlet Pressure @ 0.5 bar (g) Inlet pressure & 65 scmh Flow	10%	100 mbar (g) (+5, -20 mbar (g))	
4	Lock Up @ 0.5 bar (g) Inlet pressure & 65 scmh Flow	10%	≤ □125 mbar (g) ± 5 mbar (g)	Gradual closing of outlet valve from above operating condition
5	Relief Pressure @ inlet pressure 4 bar (g)	10%	140 mbar (g) ± 5 mbar (g)	By gradually applying pressure from external source to the outlet pipeline. Check relief valve operating pressure by connecting a rubber tube to regulator vent and immersing the tube in water. Continuous stream of bubbles indicates that the relief valve is functioning.
6	Over Pr. Shut off @ Inlet pressure 4 bar (g)	10%	160 mbar (g) ± 5 mbar (g)	By further increasing pressure from outside source to the outlet pipe line
7	Under Pr. Shut Off @ Inlet pressure 2 bar (g)	10%	40 to 65 mbar (g)	By closing the inlet valve and opening the outlet valve

If the performance (in the above tests) of any of the sample regulators is not in compliance with the acceptance norms of Technical Specifications of Mahanagar Gas Limited, then that lot of regulators will be rejected.

vii) Even after third party inspection, buyer organization reserves the rights to select a sample of regulators randomly from each manufacturing batch & have these independently tested for compliance with buyer organization's technical specifications like dimensional tolerances, leakage testing, performance, accuracy, etc. Should the results of these tests fall outside the limits specified in buyer organization's technical specification, then buyer organization reserves the rights to reject all production supplied from the batch.

9. DOCUMENTS REQUIRED WITH SUPPLY (Minimum 3 sets):

Following is the list of documents required to be sent to buyer organization's stores along with the first lot of regulators:

a) Performance specification and test certificates (100%, for each of the regulator).
b) Construction drawings, Material specifications and technical data sheets. (In English language only)
c) Installation, operation, maintenance, recommendations and instruction manual in detail.
d) Any other relevant documents required by buyer organization.

10. SPARE PARTS

The vendor shall deliver a set of standard / special tools per lot of 10 regulators (each make / model) along with each supply.

A list of spare parts should be included with the tender to cover spares requirements for the regulator unit for the first two years of operation. If this is considered unnecessary a short statement to this effect should be made. Any items listed must be priced separately.

APPENDIX A (Specific Requirements)

Data sheet for 6 scmh regulators (to be filled by vendor)

Sr. No.	Specification	Requirements	Party's Offer	Deviations (if any)	Remarks
1	Maximum inlet pressure	4.0 bar			
2	Minimum inlet pressure	0.5 bar			
3	Nominal outlet pressure	100 mbar			
4	Factory setting	100 mbar outlet pressure at 1 bar inlet pressure & **6 scmh** flow.			
5	Maximum capacity	**6 scmh** flow at minimum inlet of 0.5 bar pressure, maximum outlet pressure droop allowed is 20% of nominal outlet pressure & **12 scmh** flow at 4 bar inlet pressure, maximum outlet pressure elevation allowed is 5% of nominal outlet pressure.			
6	Maximum operating temperature	45 ^{0}C			
7	Minimum operating temperature	10 ^{0}C			
8	Accuracy standard	± 5% of set outlet pressure (g)			
9	Lock up pressure	Should be within 25% of nominal outlet pressure.			

Data sheet for 10 scmh regulators (to be filled by vendor)

Sr. No.	Specification	Requirements	Party's Offer	Deviations (if any)	Remarks
1	Maximum inlet pressure	4.0 bar			
2	Minimum inlet pressure	0.5 bar			
3	Nominal outlet pressure	100 mbar			
4	Factory setting	100 mbar outlet pressure at 1 bar inlet pressure & **10 scmh** flow.			
5	Maximum capacity	**10 scmh** flow at minimum inlet of 0.5 bar pressure, maximum outlet pressure droop allowed is 20% of nominal outlet pressure & **20 scmh** flow at 4 bar inlet pressure, maximum outlet pressure elevation allowed is 5% of nominal outlet pressure.			
6	Maximum operating temperature	45 ^{0}C			
7	Minimum operating temperature	10 ^{0}C			
8	Accuracy standard	± 5% of set outlet pressure (g)			
9	Lock up pressure	Should be within 25% of nominal outlet pressure.			

Data sheet for 25 scmh regulators (to be filled by vendor)

Sr. No.	Specification	Requirements	Party's Offer	Deviations (if any)	Remarks
1	Maximum inlet pressure	4.0 bar			
2	Minimum inlet pressure	0.5 bar			
3	Nominal outlet pressure	100 mbar			
4	Factory setting	100 mbar outlet pressure at 1 bar inlet pressure & **25 scmh** flow.			
5	Maximum capacity	**25 scmh** flow at minimum inlet of 0.5 bar pressure, maximum outlet pressure droop allowed is 20% of nominal outlet pressure & **50 scmh** flow at 4 bar inlet pressure, maximum outlet pressure elevation allowed is 5% of nominal outlet pressure.			
6	Maximum operating temperature	45 ^{0}C			
7	Minimum operating temperature	10 ^{0}C			
8	Accuracy standard	± 5% of set outlet pressure (g)			
9	Lock up pressure	Should be within 25% of nominal outlet pressure.			

Data sheet for 40 scmh regulators (to be filled by vendor)

Sr. No.	Specification	Requirements	Party's Offer	Deviations (if any)	Remarks
1	Maximum inlet pressure	4.0 bar			
2	Minimum inlet pressure	0.5 bar			
3	Nominal outlet pressure	100 mbar			
4	Factory setting	100 mbar outlet pressure at 1 bar inlet pressure & **40 scmh** flow.			
5	Maximum capacity	**40 scmh** flow at minimum inlet of 0.5 bar pressure, maximum outlet pressure droop allowed is 20% of nominal outlet pressure & **80 scmh** flow at 4 bar inlet pressure, maximum outlet pressure elevation allowed is 5% of nominal outlet pressure.			
6	Maximum operating temperature	45 ^{0}C			
7	Minimum operating temperature	10 ^{0}C			
8	Accuracy standard	± 5% of set outlet pressure (g)			
9	Lock up pressure	Should be within 25% of nominal outlet pressure.			

Data sheet for 65 scmh regulators (to be filled by vendor)

Sr. No.	Specification	Requirements	Party's Offer	Deviations (if any)	Remarks
1	Maximum inlet pressure	4.0 bar			
2	Minimum inlet pressure	0.5 bar			
3	Nominal outlet pressure	100 mbar			
4	Factory setting	100 mbar outlet pressure at 1 bar inlet pressure & **65 scmh** flow.			
5	Maximum capacity	**65 scmh** flow at minimum inlet of 0.5 bar pressure, maximum outlet pressure droop allowed is 20% of nominal outlet pressure & **130 scmh** flow at 4 bar inlet pressure, maximum outlet pressure elevation allowed is 5% of nominal outlet pressure.			
6	Maximum operating temperature	45 ^{0}C			
7	Minimum operating temperature	10 ^{0}C			
8	Accuracy standard	± 5% of set outlet pressure (g)			
9	Lock up pressure	Should be within 25% of nominal outlet pressure.			

Quality Assurance Plan

Sr. No.	Characteristics / Type of Test	Acceptance Norms	Sample Size	Reference standard	Format of Records	Scope		Remarks
						Vendor	TPIA	
1	Chemical & Physical test report	For regulator body and cover		As per Technical Specification	MTC	-	R	TPIA should review the MTC of body and cover of regulator
2	Performance Test at diaphragm vertical and horizontal				Test certificate	P	W	Vendor should carry out 100 % inspection and TPIA should select 10% lot randomly for inspection
a	Outlet pressure @ 4.0 bar (g) Inlet pressure & Max. flow (in scmh)	100 mbar (g) (± 5 mbar (g)	10%	As per Technical Specification Test Plan		P	W	
b	Outlet Pressure @ 0.5 bar (g) Inlet pressure & rated Flow	100 mbar (g) (± 5 mbar (g)				P	W	
c	Lock Up @ 4.0 bar (g) Inlet pressure & Max Flow (in scmh)	≤ 130 mbar (g)				P	W	
d	Lock Up @ 0.5 bar (g) Inlet pressure & rated Flow (in scmh)	≤ 125 mbar ± 5 mbar (g)				P	W	
e	Relief Pressure @ inlet pressure 4 bar (g)	130 mbar (g) -145 mbar (g)				P	W	
f	Over Pr. Shut off @ Inlet pressure 4 bar (g)	150 mbar (g) -165 mbar (g)				P	W	
g	Under Pr. Shut Off @ Inlet pressure 2 bar (g)	40 mbar (g) to 65 mbar (g)				P	W	
h	Factory Settings	100 mbar (g) (± 5 mbar (g)	10%	As per Appendix A		P	W	

3	Pneumatic leak test of regulator	Pneumatic leak test at specified inlet before regulating and after regulating at outlet pressure	10%			P	W	
4	Impulse Connection	Internal	10%			P	W	
5	Visual inspection of regulator	Ø Surface Finish Ø Size of Inlet & Outlet End connection	10%	As per Technical Specification Clause No.3.b	Test certificate	P	W	
6	Marking & Packing	Ø Capacity of the regulator Ø Inlet pressure range Ø Outlet pressure range Ø Regulation accuracy Ø Direction of flow Ø Name of the manufacturer Ø Model No. Ø Serial number of the regulator Ø Month and year of manufacturing	10%	As per Technical Specification Clause No.4		P	W	
	P - Perform	W -Witness	R - Review					
REMARKS	1. TPIA should ensure that the latest copy of standard is available with the vendor.							
	2. All the measuring instruments shall be duly calibrated at the time of inspection.							
	3. Review of Calibration certificates for all the measuring instruments at the time of inspection, along with the Master calibration certificate of the measuring instruments from which the instrument is calibrated.							
	4. After satisfactory inspection, the TPI agency to apply their mark (stamp / sticker / embossing / etc.) on each regulator near to marking plate. Also, TPI should apply their mark (stamp / sticker / embossing / etc.) on the outer box, after verifying the information mentioned in the technical specification clause No. 4							