



Bhagyanagar Gas Ltd.

BHAGYANAGAR GAS LIMITED

{A joint venture of M/s GAIL (India) Ltd. and M/s Hindustan Petroleum Corporation Ltd.}

HYDERABAD (INDIA)

CITY GAS DISTRIBUTION PROJECT AT HYDERABAD, VIJAYAWADA & KAKINADA

BID DOCUMENT FOR SUPPLY OF GAS PRESSURE REGULATORS

DOMESTIC COMPETITIVE BIDDING

Bid Document No.: MEC/23R8/01/51/S2/CF/00/0006

VOLUME – II OF II



PREPARED AND ISSUED BY

MECON LIMITED

(A Govt. of India Undertaking)
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Bhagyanagar Gas Limited
**CITY GAS DISTRIBUTION PROJECT AT HYDERABAD, VIJAYAWADA
AND KAKINADA**



SUPPLY OF GAS PRESSURE REGULATORS

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VOLUME-II

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Bhagyanagar Gas Ltd.

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AND KAKINADA**

SUPPLY OF GAS PRESSURE REGULATORS

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SECTION - I
TECHNICAL SPECIFICATION
FOR
GAS PRESSURE REGULATORS

 <p>Bhagyanagar Gas Ltd.</p>	<p>Bhagyanagar Gas Limited</p> <p>CITY GAS DISTRIBUTION PROJECT AT HYDERABAD, VIJAYAWADA AND KAKINADA</p> <p>SUPPLY OF GAS PRESSURE REGULATORS</p> <p>Bid Document No.: MEC/23R8/01/51/S2/CF/00/0006</p>	 <p>ISO 9001 Company</p>
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1.0 PROJECT DETAILS

Bhagyanagar Gas Limited (BGL) is a joint venture of M/s GAIL (India) Limited and M/s Hindustan Petroleum Corporation Limited (HPCL) operating CNG & City Gas Distribution in the states of Telangana and Andhra Pradesh.

Presently, Bhagyanagar Gas Limited is expanding the CNG & City Gas Distribution Network (CGDN) to supply Natural Gas to domestic, commercial, industrial and automobile Consumers in the states of Telangana and Andhra Pradesh.

M/s MECON LIMITED, who has been retained by Bhagyanagar Gas Limited, as a consultant for "CGD PROJECT. This technical specification covers the requirement of gas pressure regulators for CGDN at Hyderabad, Vijayawada & Kakinada.

2.0 BRIEF SCOPE OF WORK

Supplier's scope of work shall include Design, detail engineering, manufacturing, assembly, factory testing, inspection (as applicable as per bid document), marking & packaging, supply of Regulators, handling, transportation, loading/ unloading at BGL stores in the respective cities, documentation etc. & commissioning spares.



3.0 REFERENCE STANDARDS

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, EN 334 standard as applicable.

As per PNGRB Guidelines, compliance to EN 334 standard shall be confirmed for all regulators. Leak test for all regulators shall be performed complying to EN13611.

4.0 PERFORMANCE REQUIREMENT AND STANDARD FEATURES

- a) Satisfactory operation of regulator for the inlet & outlet pressure as specified in the datasheet.
- b) Inlet / Outlet connection (to be specified by the vendor) has to be approved by BGL/MECON and should be of screwed type as per ISO 7 Part 1: 1994 or any other type of connection (only with prior approval of BGL/MECON).
- c) Suitable for use with natural gas at nominal specific gravity of 0.65 & operating in ambient temperature of up to 45 deg C.

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- d) Over Pressure Shut off(OPSO) device to protect against downstream over pressure and creep relief valve to protect against downstream over pressure at low flows or in the event of valve seat malfunction, as indicated in the datasheets.
- e) Under Pressure Shut off (UPS0) device to protect against downstream under pressure with a pressure setting as indicated in the datasheet.
- f) 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.

Variant design (if any) offered by the party has to be duly approved by BGL/MECON. For specific requirements, refer datasheets.

BGL/MECON shall approve the regulator type & model to be supplied & full technical details shall be supplied along with the technical bid.

5.0 MARKING & PACKAGING

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

- Capacity of the regulator (2.5scmh 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 be 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.

6.0 QUALITY ASSURANCE

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

BGL/MECON reserves the right to visit the Supplier's facilities without prior notice, and inspect test records and witness assembly and testing in progress.

7.0 GUARANTEE PERIOD shall be as per clause no. 14 of SCC (Vol. I of II)



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8.0 TECHNICAL EVALUATION REQUIREMENTS

- a) The Supplier is required to submit to BGL/MECON the details of the regulator to be supplied, including the manufacturing standards, model number, performance curve i.e., outlet pressure v/s flow at different inlet pressures, accuracy specifications, capacity at maximum and minimum inlet pressures along with bid for our technical evaluation of bid. All the technical documents / catalogues, etc., to be submitted along with technical bid shall be in English Language only.
- b) Any deviations from the specification should be highlighted and vendor may also quote advanced / latest models to reduce overall cost as an alternate.
- c) The data sheet should be filled up completely and should be enclosed with the Technical Bid.
- d) Compliance with Technical Specifications will be taken for granted if deviations are not specifically mentioned.

9.0 INSPECTION PLAN

- i) Testing & Inspection shall be carried out as per the Technical Specifications of BGL/MECON & EN88, EN334 as applicable as per approved Datasheet at the works of the manufacturer as per approved QAP.
- ii) BGL/MECON representative or Third party inspection agency appointed by BGL/MECON, if any shall carry out inspection during manufacturing / final inspection at the works of the manufacturer.
- iii) For bidders with Foreign manufacturing facility, arranging Internationally recognized Third Party Inspection agencies with prior approval of BGL/MECON, for witnessing inspection and testing, at his workshop and/or his sub-vendors workshop as required shall be in bidder's scope. The prices towards the same to be included in the quoted prices.
- iv) Vendor shall furnish all the material test certificates, internal test / inspection reports for 100% material at the time of inspection of each supply lot of material.
- v) 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.
- vi) 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 BGL stores.
- vii) Even after third party inspection, BGL/MECON reserves the rights to select a sample of regulators randomly from each manufacturing batch & have these independently tested for compliance with BGL/MECON Technical Specifications like dimensional tolerances, leakage testing, performance, accuracy, etc. Should the results of these tests fall outside the limits specified in BGL/MECON technical specification, then BGL/MECON reserves the rights to reject all production supplied from the batch.

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viii) If the performance of any of the sample regulators is not in compliance with the acceptance norms of the respective standards, then that lot of regulators will be rejected.

10.0 DOCUMENTS TO BE FURNISHED WITH SUPPLY (Minimum 3 sets):

Following is the list of documents required to be sent to BGL/MECON along with the first lot of regulators:

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



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SECTION - II
MATERIAL REQUISITION & DATA SHEETS
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Sl. No.	DESCRIPTION	UNIT	QTY
	Design, detail engineering, manufacturing, assembly, factory testing, inspection (in case of bidders with foreign manufacturing facility, the prices shall be inclusive of third party inspection charges), marking & packaging, supply of Regulators, handling, transportation, loading, unloading at BGL stores in the respective cities, documentation etc. & commissioning spares as detailed in the Technical specification.		
GROUP - A	<u>DOMESTIC REGULATORS</u>		
A.1.0	Pressure reduction of 0.5 to 6 bar (g) inlet to 21 mbar (g) outlet pressure with 2.5 SCMH actual maximum flow capacity of Domestic Regulator as per data sheet.		
a	Hyderabad	Nos	700
b	Vijayawada	Nos	1000
c	Kakinada	Nos	800
A.2.0	Pressure reduction of 0.5 to 6 bar (g) inlet to 21 mbar (g) outlet pressure with 6 SCMH actual maximum flow capacity of Domestic Regulator as per data sheet.		
a	Hyderabad	Nos	500
b	Vijayawada	Nos	300
c	Kakinada	Nos	100
A.3.0	Pressure reduction of 110mbar (g) inlet to 21mbar (g) outlet pressure with 2.5 SCMH actual maximum flow capacity of Domestic Regulator as per data sheet.		
a	Hyderabad	Nos	2500
b	Vijayawada	Nos	800
c	Kakinada	Nos	1000
GROUP- B	<u>COMMERCIAL & SERVICE REGULATORS</u>		
B.1.0	Pressure reduction of 0.5 to 6bar (g) inlets to 110 mbar (g) outlet pressure with 10 SCMH-flow capacity of Service Regulator as per datasheet		
a	Hyderabad	Nos	20
b	Vijayawada	Nos	30
c	Kakinada	Nos	15



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B.2.0	Pressure reduction of 0.5 to 6 bar(g) inlet to 110 mbar (g) outlet pressure with 25 SCMH-flow capacity of Service Regulator as per data sheet.	Nos	
a	Hyderabad	Nos	50
b	Vijayawada	Nos	20
c	Kakinada	Nos	20
B.3.0	Pressure reduction of 0.5 to 6 bar(g) inlet to 110 mbar (g) outlet pressure with 40 SCMH-flow capacity of Service Regulator as per datasheet		
a	Hyderabad	Nos	30
b	Vijayawada	Nos	20
c	Kakinada	Nos	10
B.4.0	Pressure reduction of 0.5 to 6 bar (g) inlet to 110 mbar (g) outlet pressure with 65 SCMH-flow capacity of Service Regulator as per data sheet.	Nos	
a	Hyderabad	Nos	50
b	Vijayawada	Nos	10
c	Kakinada	Nos	2
B.5.0	Pressure reduction of 0.5 to 6 bar (g) inlet to 300 mbar (g) outlet pressure with 10.0-SCMH-flow capacity of Commercial Regulator as per data sheet.	Nos.	
a	Hyderabad	Nos	15
b	Vijayawada	Nos	5
c	Kakinada	Nos	5
B.6.0	Pressure reduction of 0.5 to 6 bar(g) inlet to 300 mbar (g) outlet pressure with 25 m3/hr-flow capacity of Commercial Regulator as per data sheet.	Nos.	
a	Hyderabad	Nos	8
b	Vijayawada	Nos	8
c	Kakinada	Nos	8
B.7.0	Pressure reduction of 0.5 to 6 bar(g) inlet to 300 mbar (g) outlet pressure with 65 m3/hr-flow capacity of Commercial Regulator as per data sheet.	Nos.	
a	Hyderabad	Nos	3
b	Vijayawada	Nos	2



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c	Kakinada	Nos	0
B.8.0	Pressure reduction of 0.5 to 6 bar(g) inlet to 300 mbar (g) outlet pressure with 80 m ³ /hr-flow capacity of Commercial Regulator as per data sheet.	Nos.	
a	Hyderabad	Nos	8
b	Vijayawada	Nos	5
c	Kakinada	Nos	0
B.9.0	Pressure reduction of 0.5 to 6bar(g) inlet to 300 mbar (g) outlet pressure with 40 m ³ /hr-flow capacity of Commercial Regulator as per data sheet.	Nos.	
a	Hyderabad	Nos	5
b	Vijayawada	Nos	2
c	Kakinada	Nos	0

Note:

1. Evaluation will be done as per clause no. 3.0 of IFB and clause no. of 2 ITB.
2. **Applicable for Bidders with manufacturing facility in India only:** BGL/MECON representative or Third party inspection agency appointed by BGL/MECON, if any shall carry out inspection of item no. A.1.0 to A.3.0 & B.1.0 to B.9.0 during manufacturing / final inspection at the works of the manufacturer.
3. **Applicable for Bidders with foreign manufacturing facility only:** Third Party Inspection is to be included in the quoted prices. Arranging Third Party Internationally recognized Inspection agencies like Lloyds, ABS, SGS, TUV, DNV, BV, Engineers India Limited, or any other Third Party Inspection agency only with prior approval of BGL/ MECON, for witnessing inspection and testing related to item no. A.1.0 & B.1.0 to B.5.0, at the works of the manufacturer is in the scope of the bidder.



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NATURAL GAS REGULATORS FOR DOMESTIC CONSUMERS (ITEM NO. A.1.0)		
GENERAL	Service	Natural Gas
	Qty.	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	installation position	Horizontal / Vertical
	Flow	Capacity
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	21 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range)
	Over pressure cutoff point	38 mbar(g) (Bidder shall submit the Spring Range)
	Under pressure cut off point	15 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	33±2 mbar (g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material in to the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
BODY	Casing	Casing and Body of Die cast aluminum/ steel conforming to ASTM A216 WCB and water-weather proof /corrosion resistant for outdoor installation.
	End Connections	½" NPT(Female loose nut with suitable washers) inlet and 3/4" NPT (Female loose nut with suitable washers) outlet confirming to ANSI B1.20.1(In case of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As applicable
	Diaphragm	Synthetic rubber



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Others	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminium.
	Filter	Essential(Inbuilt)
	Accuracy Class (%)	AC 10 / RG 10 or better complying to EN 334/ EN 88-2 or Equivalent
	Closing (lockup) pressure	SG 20 or better complying to EN 334/ EN 88-2 or Equivalent
	Failure Position	Closed
	Type of Reset	Manual
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	The Vendor shall submit along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered. Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material.	
	<ul style="list-style-type: none"> a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (piping etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, Calibration and certificate from statutory bodies Certificate f) Performance Curve 	
3.	End Connections shall be provided by Plastic Caps.	
4.	Flow capacity in SCMH shall be calculated considering Maximum Outlet Pressure & Operating Temperature	



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NATURAL GAS PRESSURE REGULATORS FOR DOMESTIC CONSUMERS (ITEM NO. A.2.0)		
GENERAL	Service	Natural Gas
	Qty.	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	installation position	Horizontal / Vertical
Flow	Capacity	6 SCMH
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	21 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range)
	Over pressure cutoff point	38 mbar(g) (Bidder shall submit the Spring Range)
	Under pressure cut off point	15 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	33±2 mbar (g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material in to the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
BODY	Casing	Casing and Body of Die cast aluminum/ steel conforming to ASTM A216 WCB and water-weather proof /corrosion resistant for outdoor installation.
	End Connections	½" NPT(Female loose nut with suitable washers) inlet and 3/4" NPT (Female loose nut with suitable washers) outlet confirming to ANSI B1.20.1(In case of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As applicable
	Diaphragm	Synthetic rubber



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Others	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminium.
	Filter	Essential(Inbuilt)
	Accuracy Class (%)	AC 10 / RG 10 or better complying to EN 334/ EN 88-2 or Equivalent
	Closing (lockup) pressure	SG 20 or better complying to EN 334/ EN 88-2 or Equivalent
	Failure Position	Closed
	Type of Reset	Manual
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	<p>The Vendor shall submit along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered. Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material.</p> <p>a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, Calibration and certificate from statutory bodies Certificate f) Performance Curve</p>	
3.	End Connections shall be provided by Plastic Caps.	
4.	Flow capacity in SCMH shall be calculated considering Maximum Outlet Pressure & Operating Temperature	



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NATURAL GAS PRESSURE REGULATORS FOR DOMESTIC CONSUMERS (ITEM NO. A.3.0)		
GENERAL	Service	Natural Gas
	Qty.	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having insufficient downstream pressure slam shut device & relief valve.
	Connections	Angular Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	Installation position	Horizontal / Vertical
Flow	Capacity	2.5 SCMH
PRESSURE & TEMPERATURE	Inlet Pressure	110 mbar
	Design Pressure	0.5 bar(g)
	Outlet pressure set point	21 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range)
	Over pressure cutoff point	Not required for Fail to close type & required for Fail to open type Regulator
	Under pressure cut off point	15 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	Not required for Fail to close type & required for Fail to open type Regulator.
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
BODY	Casing	Casing and Body of Die cast aluminum/ steel conforming to ASTM A216 WCB and water-weather proof /corrosion resistant for outdoor installation.
	End Connections	1/2" NPT(Female loose nut with suitable washers) inlet and 3/4" NPT (Female loose nut with suitable washers) outlet confirming to ANSI B1.20.1(In case of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As applicable



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Internals	Diaphragm	Synthetic rubber
	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminium.
Others	Filter	Essential(Inbuilt)
	Accuracy Class (%)	AC 10/ RG 10 or better complying to EN 334/ EN 88-1 (or) Equivalent
	Closing (lockup) pressure	SG 20 or better complying to EN 334/ EN 88-1 (or) Equivalent
	Failure Position	Closed (If Regulators offered fail to open type then it should be supplied with OPSO @ 38 mBar & Creep Relief valve @ 33±2 mBar)
	Type of Reset	Auto/Manual (Vendor to confirm)
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	<p>The Vendor shall submit, along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered. Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material.</p> <p>a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (Piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, calibration and certificate from statutory bodies Certificate. f) Performance curves</p>	
3.	End Connections shall be provided by Plastic Caps.	
4.	Flow capacity in SCMH shall be calculated considering Maximum Outlet Pressure & Operating Temperature	



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NATURAL GAS SERVICE REGULATORS (ITEM NO. B.1.0)		
GENERAL	Service	Natural Gas
	Qty	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having excess pressure slam shut device, insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	Installation position	Horizontal / Vertical
	Flow	Capacity
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6 bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	110 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range)
	Over pressure cutoff point	160 mbar(g) (Bidder shall submit Spring Range)
	Under pressure cut off point	50 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	138 mbar (g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material in to the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
BODY	Casing	Casing and Body of Die cast aluminum/ Ductile Iron/ steel conforming to ASTM A216 WCB and water-weather proof IP 65 / corrosion resistant for outdoor installation.
	End Connections	1" NPT(Female loose nut with suitable washers) inlet and 1.5" NPT (Female loose nut with suitable washers) outlet confirming to ANSI B1.20.1(Incase of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As applicable



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Internals	Diaphragm	Synthetic rubber
	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminum.
Others	Filter	Essential(Inbuilt) (if not inbuilt same shall be supplied separately)
	Accuracy Class (%)	AC 5/ RG 5 complying to EN 334 (or) Equivalent
	Closing (lockup) pressure	SG 10 complying to EN 334 (or) Equivalent
	Failure Position	Closed
	Type of Reset (Vendor to confirm)	Manual
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	<p>The Vendor shall submit along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered.</p> <p>Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material.</p> <p>a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (Piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, calibration and certificate from statutory bodies Certificate. f) Performance curves</p>	
3.	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.	
4.	End Connections shall be provided by Plastic Caps.	
5.	Flow capacity in SCMH shall be calculated considering Maximum Outlet Pressure & Operating Temperature	



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NATURAL GAS SERVICE REGULATORS (ITEM NO. B.2.0)		
GENERAL	Service	Natural Gas
	Qty	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having excess pressure slam shut device, insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	Installation position	Horizontal / Vertical
	Flow	Capacity
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	110 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range)
	Over pressure cutoff point	160 mbar(g) (Bidder shall submit Spring Range)
	Under pressure cut off point	50 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	138 mbar(g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material into the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
BODY	Casing	Casing and Body of Die cast aluminum/ Ductile Iron/ steel conforming to ASTM A216 WCB and water-weather proof IP 65 / corrosion resistant for outdoor installation.
	End Connections	1" NPT(Female loose nut with suitable washers) inlet and 1.5" NPT (Female loose nut with suitable washers) outlet confirming to ANSI B1.20.1(Incase of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As applicable



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Internals	Diaphragm	Synthetic rubber
	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminum.
Others	Filter	Essential(Inbuilt) (if not inbuilt same shall be supplied separately)
	Accuracy Class (%)	AC 5/ RG 5 complying to EN 334 (or) Equivalent
	Closing (lockup) pressure	SG 10 complying to EN 334 (or) Equivalent
	Failure Position	Closed
	Type of Reset (Vendor to confirm)	Manual
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	<p>The Vendor shall submit along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered.</p> <p>Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material.</p> <p>a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (Piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, calibration and certificate from statutory bodies Certificate. f) Performance curves</p>	
3.	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.	
4.	End Connections shall be provided by Plastic Caps.	
5.	Flow capacity in SCMH shall be calculated considering Maximum Outlet Pressure & Operating Temperature	



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NATURAL GAS SERVICE REGULATORS (ITEM NO. B.3.0)		
GENERAL	Service	Natural Gas
	Qty	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having excess pressure slam shut device, insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	Installation position	Horizontal / Vertical
	Flow	Capacity
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	110 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range)
	Over pressure cutoff point	160 mbar(g) (Bidder shall submit Spring Range)
	Under pressure cut off point	50 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	138 mbar (g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material in to the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
BODY	Casing	Casing and Body of Die cast aluminum/ Ductile Iron/ steel conforming to ASTM A216 WCB and water-weather proof IP 65 / corrosion resistant for outdoor installation.
	End Connections	1" NPT(Female loose nut with suitable washers) inlet and 1.5" NPT (Female loose nut with suitable washers) outlet confirming to ANSI B1.20.1(In case of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As applicable



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Internals	Diaphragm	Synthetic rubber
	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminum.
Others	Filter	Essential(Inbuilt) (if not inbuilt same shall be supplied separately)
	Accuracy Class (%)	AC 5/ RG 5 complying to EN 334 (or) Equivalent
	Closing (lockup) pressure	SG 10 complying to EN 334 (or) Equivalent
	Failure Position	Closed
	Type of Reset	Manual
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	<p>The Vendor shall submit along with the offer, the manufacturing standards, Model number, performance curves and approvals of the statutory bodies and technical details of the model offered.</p> <p>Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material.</p> <p>a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (Piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, calibration and certificate from statutory bodies Certificate. f) Performance curves</p>	
3.	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.	
4.	End Connections shall be provided by Plastic Caps.	
5.	Flow capacity in SCMh shall be calculated considering Maximum Outlet Pressure & Operating Temperature	



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NATURAL GAS SERVICE REGULATORS (ITEM NO. B.4.0)		
GENERAL	Service	Natural Gas
	Qty	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having excess pressure slam shut device, insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	Installation position	Horizontal / Vertical
	Flow	Capacity
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	110 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range)
	Over pressure cutoff point	160 mbar(g) (Bidder shall submit Spring Range)
	Under pressure cut off point	50 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	138 mbar(g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material in to the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
BODY	Casing	Casing and Body of Die cast aluminum/ Ductile Iron/ steel conforming to ASTM A216 WCB and water-weather proof IP 65 / corrosion resistant for outdoor installation.
	End Connections	1" NPT(Female loose nut with suitable washers) inlet and 1.5" NPT (Female loose nut with suitable washers) outlet confirming to ANSI B1.20.1(Incase of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As applicable



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Internals	Diaphragm	Synthetic rubber
	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminum.
Others	Filter	Essential(Inbuilt) (if not inbuilt same shall be supplied separately)
	Accuracy Class (%)	AC 5/ RG 5 complying to EN 334 (or) Equivalent
	Closing (lockup) pressure	SG 10 complying to EN 334 (or) Equivalent
	Failure Position	Closed
	Type of Reset	Manual
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	<p>The Vendor shall submit along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered.</p> <p>Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material</p> <p>a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (Piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, calibration and certificate from statutory bodies Certificate. f) Performance curves</p>	
3.	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.	
4.	End Connections shall be provided by Plastic Caps.	
5.	Flow capacity in SCMH shall be calculated considering Maximum Outlet Pressure & Operating Temperature	



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NATURAL GAS PRESSURE REGULATORS FOR COMMERCIAL CONSUMERS (ITEM NO. B.5.0)		
GENERAL	Service	Natural Gas
	Qty	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having excess pressure slam shut device, insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	installation position	Horizontal / Vertical
Flow	Capacity	10 cum/hr. (Actual)
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	300 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range)
	Over pressure cutoff point	400 mbar(g) (Bidder shall submit Spring Range)
	Under pressure cut off point	100 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	360 mbar(g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material in to the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
BODY	Casing	Casing and Body of Die cast aluminum/ Ductile Iron/ steel conforming to ASTM A216 WCB and water-weather proof IP 65 / corrosion resistant for outdoor installation.
	End Connections	1" NPT(Female loose nut with suitable washers) inlet and 1.5" NPT (Female loose nut with suitable washers) outlet confirming to ANSI B1.20.1(Incase of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)



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	Fire Resistance	As applicable
Internals	Diaphragm	Synthetic rubber
	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminium.
Others	Filter	Essential(Inbuilt) (if not inbuilt same shall be supplied separately)
	Accuracy Class (%)	AC 5/ RG 5 complying to EN 334 (or) Equivalent
	Closing (lockup) pressure	SG 10 complying to EN 334 (or) Equivalent
	Failure Position	Closed
	Type of Reset	Manual
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	<p>The Vendor shall submit, along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered. Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material.</p> <p>a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (Piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, calibration and certificate from statutory bodies Certificate. f) Performance curves</p>	
3.	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.	
4.	End Connections shall be provided by Plastic Caps.	
5.	Flow capacity in SCMh shall be calculated considering Maximum Outlet Pressure & Operating Temperature	



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NATURAL GAS PRESSURE REGULATORS FOR COMMERCIAL CONSUMERS (ITEM NO. B.6.0)		
GENERAL	Service	Natural Gas
	Qty	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having excess pressure slam shut device, insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	Installation position	Horizontal / Vertical
	Flow	Capacity
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6 bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	300 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range)
	Over pressure cutoff point	400 mbar(g) (Bidder shall submit Spring Range)
	Under pressure cut off point	100 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	360 mbar (g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material in to the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
BODY	Casing	Casing and Body of Die cast aluminum/ Ductile Iron/ steel conforming to ASTM A216 WCB and water-weather proof IP 65 / corrosion resistant for outdoor installation.
	End Connections	1" NPT(Female loose nut with suitable washers) inlet and 1.5" NPT (Female loose nut with suitable washers) outlet confirming to ANSI B1.20.1(In case of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)



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	Fire Resistance	As applicable
Internals	Diaphragm	Synthetic rubber
	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminium.
Others	Filter	Essential(Inbuilt) (if not inbuilt same shall be supplied separately)
	Accuracy Class (%)	AC 5/ RG 5 complying to EN 334 (or) Equivalent
	Closing (lockup) pressure	SG 10 complying to EN 334 (or) Equivalent
	Failure Position	Closed
	Type of Reset	Manual

Notes:

1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.
2.	The Vendor shall submit, along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered. Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material. a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (Piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, calibration and certificate from statutory bodies Certificate. f) Performance curves
3.	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.
4.	End Connections shall be provided by Plastic Caps.
5.	Flow capacity in SCMH shall be calculated considering Maximum Outlet Pressure & Operating Temperature



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NATURAL GAS PRESSURE REGULATORS FOR COMMERCIAL CONSUMERS (ITEM NO. B.7.0)		
GENERAL	Service	Natural Gas
	Qty	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having excess pressure slam shut device, insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	Installation position	Horizontal / Vertical
Flow	Capacity	65 SCMH
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	300 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range) spring range)
	Over pressure cutoff point	400 mbar(g) (Bidder shall submit Spring Range)
	Under pressure cut off point	100 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	360 mbar(g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material in to the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
	Casing	Casing and Body of Die cast aluminum/ Ductile Iron/ steel conforming to ASTM A216 WCB and water-weather proof IP 65 / corrosion resistant for outdoor installation.



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BODY	End Connections	1" NPT(Female loose nut with suitable washers) inlet and 1.5" NPT (Female loose nut with suitable washers) outlet conforming to ANSI B1.20.1(Incase of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As applicable
Internals	Diaphragm	Synthetic rubber
	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminum.
Others	Filter	Essential(Inbuilt) (if not inbuilt same shall be supplied separately)
	Accuracy Class (%)	AC 5/ RG 5 complying to EN 334 (or) Equivalent
	Closing (lockup) pressure	SG 10 complying to EN 334 (or) Equivalent
	Failure Position	Closed
	Type of Reset	Manual
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	The Vendor shall submit, along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered. Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material. a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (Piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, calibration and certificate from statutory bodies Certificate. f) Performance curves	
3.	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.	
4.	End Connections shall be provided by Plastic Caps.	
5.	Flow capacity in SCMH shall be calculated considering Maximum Outlet Pressure & Operating Temperature	



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NATURAL GAS PRESSURE REGULATORS FOR COMMERCIAL CONSUMERS (ITEM NO. B.8.0)		
GENERAL	Service	Natural Gas
	Qty	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having excess pressure slam shut device, insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	Installation position	Horizontal / Vertical
Flow	Capacity	80 SCMH
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	300 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range) spring range)
	Over pressure cutoff point	400 mbar(g) (Bidder shall submit Spring Range)
	Under pressure cut off point	100 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	360 mbar(g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material in to the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
	Casing	Casing and Body of Die cast aluminum/ Ductile Iron/ steel conforming to ASTM A216 WCB and water-weather proof IP 65 / corrosion resistant for outdoor installation.



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BODY	End Connections	1" NPT(Female loose nut with suitable washers) inlet and 1.5" NPT (Female loose nut with suitable washers) outlet conforming to ANSI B1.20.1(Incase of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As applicable
Internals	Diaphragm	Synthetic rubber
	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminum.
Others	Filter	Essential(Inbuilt) (if not inbuilt same shall be supplied separately)
	Accuracy Class (%)	AC 5/ RG 5 complying to EN 334 (or) Equivalent
	Closing (lockup) pressure	SG 10 complying to EN 334 (or) Equivalent
	Failure Position	Closed
	Type of Reset	Manual
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	<p>The Vendor shall submit, along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered. Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material.</p> <p>a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (Piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, calibration and certificate from statutory bodies Certificate. f) Performance curves</p>	
3.	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.	
4.	End Connections shall be provided by Plastic Caps.	
5.	Flow capacity in SCMh shall be calculated considering Maximum Outlet Pressure & Operating Temperature	



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NATURAL GAS PRESSURE REGULATORS FOR COMMERCIAL CONSUMERS (ITEM NO. B.9.0)		
GENERAL	Service	Natural Gas
	Qty	As per PRICE SCHEDULE/MR of Tender
	Design	Direct acting spring control pressure regulator with in-built two stage pressure reducing valve type balance regulating unit to ensure a constant outlet pressure having excess pressure slam shut device, insufficient downstream pressure slam shut device & relief valve.
	Connections Orientation	Inline Inlet and Outlet connection
	Installation	Suitable for Outdoor Installation, Tamper proof and corrosion resistance for a life period of 20 years.
	Installation position	Horizontal / Vertical
	Flow	Capacity
PRESSURE & TEMPERATURE	Inlet Pressure	0.5 to 6bar(g)
	Design Pressure	6 bar(g)
	Outlet pressure set point	300 mbar(g) (Factory Set Point) (Bidder shall necessarily submit the performance curve and available spring range) spring range)
	Over pressure cutoff point	400 mbar(g) (Bidder shall submit Spring Range)
	Under pressure cut off point	100 mbar(g) (Bidder shall submit Spring Range)
	Creep Relief Valve	360 mbar(g) (the position of the atmospheric venting shall not be towards vertically top to avoid entry of foreign material in to the regulator).
	Operating Temperature	0° C to 45 ° C, Design 60 ° C
	Casing	Casing and Body of Die cast aluminum/ Ductile Iron/ steel conforming to ASTM A216 WCB and water-weather proof IP 65 / corrosion resistant for outdoor installation.



Bhagyanagar Gas Limited
CITY GAS DISTRIBUTION PROJECT AT HYDERABAD, VIJAYAWADA
AND KAKINADA



SUPPLY OF GAS PRESSURE REGULATORS

Bid Document No.: MEC/23R8/01/51/S2/CF/00/0006

BODY	End Connections	1" NPT(Female loose nut with suitable washers) inlet and 1.5" NPT (Female loose nut with suitable washers) outlet conforming to ANSI B1.20.1(Incase of end connections are differing bidder to provide suitable adaptors of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As applicable
Internals	Diaphragm	Synthetic rubber
	Internals	Internal parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminum.
Others	Filter	Essential(Inbuilt) (if not inbuilt same shall be supplied separately)
	Accuracy Class (%)	AC 5/ RG 5 complying to EN 334 (or) Equivalent
	Closing (lockup) pressure	SG 10 complying to EN 334 (or) Equivalent
	Failure Position	Closed
	Type of Reset	Manual
Notes:		
1.	The regulator shall be indelibly marked with details of Max. Flow , Inlet and outlet Pressures range, direction of flow, name of the manufacturer, model, unique serial number, Date of Manufacturing etc.	
2.	The Vendor shall submit, along with the offer, the manufacturing standards, Model number, performance curves, approvals of the statutory bodies and technical details of the model offered. Successful Vendor shall submit following documents during detail engineering in 3 sets of Hard copies & one set of Hard copy during supply of material. a) Dimensional outlet with mounting details with model number, part list and technical literatures. b) Connection by purchaser (Piping, Electrical etc.) c) Installation, Operation and Maintenance Instruction Manual. d) Testing and Inspection procedure. e) Test, calibration and certificate from statutory bodies Certificate. f) Performance curves	
3.	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.	
4.	End Connections shall be provided by Plastic Caps.	
5.	Flow capacity in SCMH shall be calculated considering Maximum Outlet Pressure & Operating Temperature	