



GAIL GAS LTD

(A wholly owned subsidiary of GAIL (India) Limited)

CNG AND CITY GAS DISTRIBUTION PROJECT

BID DOCUMENT FOR TENDER FOR DOMESTIC AND COMMERCIAL METER & REGULATOR VOLUME – II OF II (TECHNICAL)

(BID DOCUMENT NO: 110290/WGI/GAIL GAS/20-R0)

LIMITED INTERNATIONAL COMPETITIVE BIDDING



DELIVERS. EVOLVES.

WHOLE LIFE SOLUTIONS FOR PIPELINE AND SUBSEA SYSTEMS

ISSUED BY



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MATERIAL REQUISITION
FOR DOMESTIC & COMMERCIAL
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1.0 SCOPE OF SUPPLY

1.1 General

This Specification covers, supply of Domestic Meter, Domestic Regulator & Commercial Meter, Commercial Regulator to be used in City Gas Distribution for Kota, Dewas, Sonipat & Meerut City.

The scope of supply covers design, engineering, manufacture, inspection, testing, supply, shipment and documentation requirements of these items in accordance with the requirements of this Requisition.

Item	Description	Quantity	Remarks
	Domestic Meter & Domestic Regulator		
1	Diaphragm Type Domestic Meter-(G1.6) (Spec as per attached data sheet no.: 11-0290-02-11-02-003)	15,000	Connection Type: LHS Inlet: 12,000 RHS Inlet: 3,000
2	Domestic Regulator (Spec as per attached data sheet no.: 11-0290-02-11-02-004)	8000	In-built Strainer, Domestic Regulator with OPS, UPS & CRV, PRV with safety features, Pressure gauge.
	Commercial Meter		
3	Diaphragm Type Commercial Meter –(G 4) (Spec as per attached data sheet no.: 11-0290-02-11-02-005)	60	
4	Diaphragm Type Commercial Meter –(G 6) (Spec as per attached data sheet no.: 11-0290-02-11-02-005)	40	
5	Diaphragm Type Commercial Meter –(G 10) (Spec as per attached data sheet no.: 11-0290-02-11-02-005)	40	
6	Diaphragm Type Commercial Meter –(G 16) (Spec as per attached data sheet no.: 11-0290-02-11-02-004)	20	
7	Diaphragm Type Commercial Meter –(G 25) (Spec as per attached data sheet no.: 11-0290-02-11-02-005)	20	
	Commercial Regulator		
8	Pressure Regulator Type-1 (Spec as per attached data sheet no.: 11-0290-02-11-02-006)	100	In-built Strainer, Commercial Regulator with OPS, UPS & CRV, PRV with safety features, Pressure gauge.
9	Pressure Regulator Type-2 (Spec as per attached data sheet no.:11-0290-02-11-02-007)	60	Same as Above
10	Pressure Regulator Type-3 (Spec as per attached data sheet no.: 11-0290-02-11-02-008)	20	Same as Above



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11	Pressure Regulator Type-4 (Spec as per attached data sheet no.: 11-0290-02-11-02-009)	5	Pressure Control Valve with Integral assembly of Slam-shut Valve.
Optional Item			
Domestic Meter with AMR facility			
12	Diaphragm type Smart Domestic Meter with AMR (Automated Meter Reading) facility-G1.6 (Spec as per attached data sheet)	500	Connection Type: LHS Inlet: 500
13	Hand held terminal	8	2 hand held terminal per city.

2.0 REMARKS

2.1 Supplier's Compliance

Supplier shall submit his bid in full compliance with the requirements of this MR and attachments. Bidder shall include the following statement in his bid:

We certify that our bid is fully complying with your enquiry dated and referenced

Compliance with this material Requisition in any instance shall not relieve the Vendor of his responsibility to meet the specified performance.

2.2 Compliance with Specification

The supplier shall be completely responsible for the design, materials, fabrication, testing, and inspection, preparation for shipment & transfer of above material to nominated delivery point strictly in accordance with the MR & all attachments thereto.

2.3 Supplier's Scope

Supplier's scope of work includes the equipment with all internals & accessories shown on the data sheets, specifications and all unmentioned parts necessary for a satisfactory operation & testing except those which are indicated to be out of Supplier's supply.

2.4 Inspection

Supplier shall submit with his bid a list of 3 well known international Third Party inspection Agencies as per enclosed vendor list, which he intends to use for inspection. This agency will issue all relevant certificates as per specification, codes & approved QAP.

Inspection shall also be performed by a designated Third Party Inspection agency and/or purchaser as set out & specified in the codes & particular documents forming this MR & QAP.

3.0 SPECIAL INSTRUCTIONS TO BIDDERS

3.1 Bidder to note that no correspondence shall be entered into or entertained after the bid submission.

3.2 Bidder shall furnish quotation only in case they can supply material strictly as per this Material Requisition and specification/data sheets forming part of Material Requisition.

3.3 If the offer contains any technical deviations or clarifications or stipulates any technical specifications (even if in line with MR requirements) and does not include complete scope & technical/ performance data required to be submitted with the offer, the offer shall be liable for rejection.

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- 3.5 The submission of prices by the Bidder shall be construed to mean that he has confirmed compliance with all technical specifications of the corresponding item(s).
- 3.6 Supplier must note that stage wise inspection for complete fabrication, testing including raw material inspection to be carried out.
- 3.8 The manufacturer must deliver a Inspection Certificate EN 10204 3.1 stating the quality, for regulation & calibration report as per EN 1359 for meter.
- 3.10 All material shall be delivered at Company's designated storage yard.

4.0 INFORMATION/ DOCUMENTS / DRAWINGS TO BE SUBMITTED BY SUCCESSFUL BIDDER

Successful Bidder shall submit four copies unless noted otherwise, each of the following:

- 4.1 Inspection & test reports for all mandatory tests as per the applicable code as well as test reports for any supplementary tests, in nicely bound volumes.
- 4.2 Filled in Quality Assurance Plan (QAP) for Purchaser's/ Consultant's approval. These QAPs shall be submitted in two copies with in 15 days from LOI/ FOI.
- 4.3 Detailed completion schedule activity wise (Bar Chart), within one week of placement of order.

Note: All drawings, instructions, catalogues, etc., shall be in English language and all dimensions shall be metric units.

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GAIL GAS LIMITED
CITY GAS DISTRIBUTION



SPECIFICATION FOR
DOMESTIC / COMMERCIAL DIAPHRAGM METER

CLIENT JOB NO.

-

TOTAL SHEETS

7

DOCUMENT NO

11

0290

02

11

06

002



REV	DATE	DESCRIPTION	PREP	CHK	APPR
1	14/04/10	REVISED AS PER COMMENTS	MT	MLS	HM
0	24/03/10	ISSUED FOR TENDER	MT	MLS	HM
A	05/03/10	ISSUED AS IDC	MT	MLS	HM

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SPECIFICATION FOR DOMESTIC /
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1.0 SCOPE

This specification defines the minimum basic and technical requirements for the design and supply of the natural gas flow meter & regulator : G1.6 for Domestic Consumers and G 4 / G 6 / G 10 / G 16 / G25 for Commercial Consumers of Kota, Sonipat, Dewas and Meerut City Gas Distribution project.

2.0 GENERAL

2.1. DEFINITIONS

Subject to the requirements of the context, the terms (hereafter listed in alphabetical order) used in this specification are given the following meaning:

AGREEMENT	Designates the agreement concluded between the CLIENT and the CONTRACTOR, under which the latter undertakes to the former the GOODS and/or SERVICES according to the stipulations which are agreed and specified in the form of an order.
CLIENT	Designates the purchaser of the GOODS and/or SERVICES which are the subject of the AGREEMENT.
CONTRACTOR	Designates the individual or legal entity with whom the order has been concluded by the CLIENT. The term "CONTRACTOR" may be used indifferently for a supplier, a manufacturer, an erection contractor, etc.
DAYS - WEEKS - MONTHS	Specify the number of calendar days, weeks or months and not of working days, weeks or months.
ENGINEER	Designates WOODGROUP INDIA Private Limited; New Delhi and its associates, if any, to which the CLIENT has entrusted various tasks in relation with the carrying out of his PROJECT.
GOODS and or SERVICES	Designate, depending on the case, all or part of the drawings or documents, substances, materials, equipment, structures, plant, tools, machinery, ... to be studied , designed, manufactured, supplied, erected, built, assembled, adapted, arranged or put into service by the CONTRACTOR under the agreement, including all the studies, tasks, works and services specified by the order. The terms GOODS or SERVICES may by indifferently used one for the other as required by the context.
PROJECT	Designates the aggregate of GOODS and/or SERVICES to be provided by one or more CONTRACTORS.



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2.2. CODES, STANDARD AND LEGAL REQUIREMENTS

The design, construction, materials, testing of the meter shall be in accordance with the International codes and standards mentioned in the present specification and with the codes, standards and legal requirements as applicable for the PROJECT.

2.3. REVIEW AND/OR APPROVAL

Whenever CLIENT and/or ENGINEER review and/or approval is requested on a document to be submitted by the CONTRACTOR or before an action is implemented by the CONTRACTOR, such review and/or approval shall always be requested in writing by the CONTRACTOR to the CLIENT and/or the ENGINEER before any action subject of this review and/or approval is taken.

CLIENT and/or ENGINEER approval shall always be given in writing.

3.0 GENERAL DESCRIPTION

The supply of the gas meter shall cover as a minimum the design, manufacture, assembly, calibration, test and commissioning of the meters and safety associated devices. The package shall also include all the necessary control equipment with enclosures suitable for the working environment.

4.0 DESCRIPTION OF THE METER

For detailed specification refer respective data sheets.

Design and construction of the meter shall be as per BS 4161 Part 6; BS EN 1359:1999; EEC; OIML standards with EEC marking on dial plate.

Domestic Meter shall be with steel case and suitable for Indoor environment while, Commercial Meter shall be suitable for outdoor installation.

Index scale for meter G1.6 to upto G6 shall be in Metric Unit and max. Index reading shall be 00000.000.

And Index scale for meter G10 to upto G25 shall be in Metric Unit and max. Index reading shall be 000000.00

Meter shall be suitable for –: 5 to 60 deg. C temperature.

CONTRACTOR to furnish the following information, as a minimum:

- a) Max. Working pressure
- b) Test Pressure
- c) Size of the meter
- d) Weight of the meter
- e) Painting details
- f) The domestic Meter should have provision of AMR compatibility, so as to install AMR facility in future.
- g) Domestic gas meter have the features of compact in size, high pressure resistance, corrosion resistance, sustained accuracy, Surface treatment and longer in life.
- h) Commercial meter should have high resistivity, better stability, sustained accuracy, surface treatment.
- i) The Bidder shall have minimum testing and calibration facility in India to provide after sales support for the offered meters.



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5.0. LIMITS OF SCOPE

The scope of the CONTRACTOR includes:

- Detailed drawings and calculations;
- Assistance to third party/authority examination;
- Design fabrication, assembly and testing of the complete meter;
- Spare parts for two years operation;
- Routine Tests as per EN 1359.

6.0 PAINTING REQUIREMENTS

6.1 GENERAL

Painting of the meter shall be carried out in works. The system of painting and finishing shall be of approved colour and quality.

6.2 GALVANIZING

Suitable anti-corrosion treatment to be provided.

7.0 INSPECTION AND TESTING

7.1 GENERAL

The extent of inspection and testing compliance in accordance with this specification and other applicable international standard and worldwide engineering practices.

All parts of the meter shall be tested in accordance with applicable codes, standards and local regulations.

The CONTRACTOR shall produce a system setting schedule for meter which require setting or calibration and shall produce calibration sheets as evidence that they have been set correctly.

Hydrostatic tests as per EN 1359 :

All pressure containing parts shall be subjected to a hydrostatic test at a pressure of not less than 1.5 times the maximum working pressure. Water containing corrosion inhibitor used for hydro-testing shall be clean and fresh (not recycled from a holding tank).

The pressure shall be held for a sufficient period to permit complete examination of the parts under pressure. This period shall not be less than 30 minutes. Any leakage shall result in rejection

Testing and inspection shall be performed on all assemblies, subassemblies and component equipment/materials in accordance with but not be limited to the following list of activities:

- Visual inspection,
- Dimensional checking,
- Functional / performance testing.
- Mechanical Pressure Loss

Note: acceptance criteria shall be in accordance with the EN 1359 and standards. If criteria are not found in the codes and standards, the CONTRACTOR shall propose them in the quality control procedures.

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Third party inspection: the CONTRACTOR shall be fully responsible for appointing the same.

Certain tests and inspection shall be witnessed by the CLIENT and/or his agent. The scope of tests and inspection are to be proposed by the CONTRACTOR for the review and approval of the CLIENT along with appropriate "Hold Points, witness points and review points".

Where any defects are found it is the responsibility of the CONTRACTOR to bear all costs in repairing the defective part. Under no circumstances may repair or welding of castings, forging or other defective parts be carried out without the written consent of the CLIENT and third party inspection. Proof of effectiveness of each repair by way of radiography and/or non-destructive testing technique, as required by the CLIENT shall be furnished by the CONTRACTOR.

The CONTRACTOR shall propose a programme of tests and submit relevant test procedures for review and agreement of the PURCHASER.

This enquiry specification lists specific tests which the CLIENT requires, but shall not preclude the CLIENT's right to call for further tests if he considers these necessary.

All welders engaged on fabrication either in the manufacturer's works or on site and on any weld repairs subsequently found necessary shall, before undertaking welding, satisfactorily complete procedure and qualification tests as per applicable code .Proposed QAP to be submitted with offer.

7.2 INSPECTION

The CONTRACTOR shall allow for inspection of the meter and witnessing of tests by the CLIENT's representative at the CLIENT's discretion. To permit the CLIENT to be present the CONTRACTOR shall give not less than 15 days notice of his intention to carry out tests or of material being available for inspection as per approved QAP.

Subsequent to order placement the CONTRACTOR shall submit a Quality Assurance and Inspection plan identifying CONTRACTOR, CLIENT and third party inspection activities for approval. The CLIENT shall be permitted to unrestricted access to the CONTRACTOR's works, and those of his sub suppliers, in pursuance of his inspection activities.

8.0 GUARANTEE

The CONTRACTOR shall guarantee that the equipment furnished is free from fault in design, workmanship, and material, and is of sufficient size and capacity, and is of proper material, to fulfill satisfactorily the operating conditions specified. Should any defect in design, material workmanship or operating characteristics develop during the first year of operation, but not later than 18 months after shipment from supplier's plant, the CONTRACTOR agrees to make all necessary or desirable alterations, repairs, and replacements of defective equipment, free of charge, and shall pay all costs and fees necessary to repair all defects or failures. No allowance will be made for alterations or repairs made by others without written consent or approval of the CLIENT. If the defect or failure to function cannot be corrected, the CONTRACTOR agrees to replace promptly, free of charge, said equipment or to remove the equipment and refund the full purchase price. In no case the CONTRACTOR will be responsible for contingent liability.

The CONTRACTOR shall correct any error or failure that affects the functional performance of the Gas Meters under normal operating conditions.

LONG TERM SUPPORT:

The CONTRACTOR shall present reasonable assurances that meter will not be obsolete in the next ten years.

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TECHNICAL DATA SHEET FOR DOMESTIC METER - G1.6					
General	Service	Natural Gas			
	Standard	Approved to EEC and OIML Standard. Note:1			
	Connection Orientation	Left side inlet and Right side outlet type -I quantity as per MR / SOR of tender	Right side inlet and Left side outlet type -II quantity as per MR / SOR of tender		
	Installation	Suitable for Out Door/In-door Installations, tamper proof and corrosion resistance for a life period of 20 years.			
Process Condition	Q max.	2.5 m ³ /hr			
	Q min.	0.016 m ³ /hr			
	Accuracy Class	± 3Qmin. to 0.1 Qmax. , ±1.5% (0.1 Qmax. to Qmax.) as per EN1359.			
	Range Ability	1:150 or better			
	Operating Pressure	21 - 24 mbar (g)			
	Pressure loss	Less than 2 mbar (g)			
	Design Pressure	500 mbar (g)			
	Specific Gravity	0.6			
	Operating Temperature	0 degree C to 60 degree C			
Body	Case work / body	Casing and Body of steel conforming to ASTM A216 WCB and water proof.			
	Corrosion Protection	All part of the meter shall be corrosion resistant & suitable coating on inside and out side casing.			
	End Connections	3/4" NPT inlet and outlet conforming to ANSI B1.20.1 (incase the end connections are differing, bidder to provide suitable adopter of approved quality to meet the specified end connections).			
	Fire Resistance	As per BS EN 1359:1999/ BS 4161 or Equivalent.			
Index	Max Index Reading	0 0000.000			
	Unit	CM(Cubic Meter)			
	Marking on Index details	GAIL GAS LIMITED			
	Ingress Protection	IP 65 and above			
Internals	Diaphragm	Polyester fabric coated with rubber on either side of equipment for an endurance life cycle of 2000 hrs. as per EN 1359.			
	Other Internals	All meter internals shall be non-metallic to immune from tampering like with magnet.			
Others	Leak testing	Meter pressurized with air at 1.5 MAOP of the meter, immersed in water for observance of leakage.			
	Automatic Meter Reading System.	The gas meter should be compatible for implanting the automatic meter reading system at a later stage by retrofitting an appropriate signal transmitting device, shall be retrofittable pulse transmitter. Bidder shall have to submit details of AMR facility along with the bid and also, give a demonstration of meter to GGL/WGI.			
	Noise	Very low, Vendor to specify.			
	Anti-temper feature	Mechanism to prevent reverse registration.			
	Air Proof ability	No leakage			
	Cyclic Volume	Vendor to furnish			
	Test Period : Leak Testing	Vendor to furnish			
	Permissible error	Vendor to furnish			
NOTE:					
1	The meter shall be approved and manufactured in accordance with the requirement of BS EN 1359:1999 or equivalent and as per the requirement of this data sheet.				
2	The Vendor shall provide calibration certificate and accuracy at MAOP of the meter for flow rates of Qmax , Qmin , 0.2 Qmax. It model approval should be from FCRI or DVGW or equivalent authorities. Dial plate shall be marked with EEC/MID marking upto 3 points.				
3	<p>The Vendor shall submit, along with the offer, the manufacturing standards, model number, performance curve, approvals of the statutory bodies and technical details of the model offered. The offered meters shall be from approved vendor list of WGI/GGL.</p> <p>a) Dimensional outlet with mounting details with model number, Part list and technical literatures.</p> <p>b) Connection by purchaser.</p> <p>c) Installation, Operation and Maintenance Instruction manual.</p> <p>d) Testing and Inspection Procedure</p> <p>e) Test, Calibration and certificate from statutory bodies.</p> <p>f) Test certificate covering each meter supplied conforming the accuracy of registration in accordance with the requirement of BS EN 1359:99 or equivalent.</p>				
4	End connections shall be provided by plastic caps.				
5	The meters shall be indelibly marked with details of maximum flow, direction of flow ,maximum operating pressure, name of manufacturer, model serial number, date of manufacturing etc along with name of client: GAIL GAS LIMITED.				
6	Center to center distance between inlet & outlet connection should be 110 mm.				
7	Flow capacity in SCMh shall be calculated considering maximum outlet pressure & operating Temperature.				
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CITY GAS DISTRIBUTION PROJECT



TECHNICAL DATA SHEET FOR DOMESTIC REGULATORS

General	Service	Natural Gas
	Quantity	As per MR / SOR of Tendor
	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.
	Connection Orientation	Inline Inlet and Outlet Connection
	Installation	Suitable for Out Door Installations, tamper proof and corrosion resistance for a life period of 20 years
Flow	Flow capacity .	2.5 SCMH
Pressure & Temperature	Inlet Pressure	1-4 bar (g)
	Operating Pressure	21-24 mbar(g)
	Outlet pressure set point	21 mbar(g) (Factory Set Point) (Spring Range 18-30 mbar.Bidder shall necessarily submit the performance curve)
	Over Pressure cut of point	38 mbar(g)
	Under Pressure Cut of Point	11 mbar(g)
	Creep Relief Valve	27 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 40 ° C , Tested at 60 ° C
Body	Casing	Casing and body of steel conforming to ASTM A216 WCB and water-weather proof / corrosion resistant for outdoor installation.
	End Connections	3/4" NPT (Female loose nut with suitable washers) inlet and 1/2" NPT (Female Loose nut with suitable washers) outlet conforming to ANSI B1.20.1 (incase the end connections are differing, bidder to provide suitable adopters of approved quality to meet the
	Fire Resistance	As applicable
Internals	Diaphragm	Synthetic Rubber (Reinforced)
	Internals	Internals parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminium
Others	Filter / Strainer	Essential (Inbuilt)
	Accuracy Class	AC 10 / RG 10.(Vendor to Specify)
	Closing Pressure	SG 20 (Vendor to Specify).
	Failure Pressure	Closed
	Type of Reset	Manual (Vendor to confirm)




NOTE:




1	The regulator shall be indelibly marked with details of maximum Flow, inlet and outlet Pressure 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 curve, approvals of the statutory bodies and technical details of the model offered. The offered regulators shall be from approved vendor list of WGI/GGL 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 certificate from statutory bodies Inspection Certificate.
3	End connections shall be provided by plastic caps.






DATA SHEET FOR DOMESTIC REGULATOR

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TECHNICAL DATA SHEET FOR COMMERCIAL METER					
General	Service	Natural Gas			
	Standard	Approved to EEC and OIML Standard. Note:1			
	Installation	Suitable for Out Door Installations, tamper proof and corrosion resistance for a life period of 20 years			
Process Condition	Flow Capacity	Refer Below Table			
	Accuracy Class	±3% (Q min to 0.2 Q max) , ±2% (0.2 Q max to Q max) as per EN 1359.			
	Range Ability	1:150 or better			
	Normal working Pressure	0.3 bar(g)			
	Max.Working Pressure	0.5 bar(g)			
	Design Pressure	0.5 bar (g) - for G4, G6 & G10 diaphragm meter. 1.0 bar(g) - for G16 & G25 diaphragm meter.			
	Specific Gravity	0.6			
	Operating Temperature	0° C to 40 ° C Design 60 ° C			
Body	Case work / body	Suitable for Indoor /Out Door Installations,tamper proof and Corrosion resistance steel.			
	Corrosion Protection	All part of the meter shall be corrosion resistant & suitable coating on inside and out side casing.			
	End Connections	1 1/2" NPT inlet and outlet conforming to ANSI B1.20.1(in case the end connections are differing, bidder to provide suitable adopter of approved quality to meet the specified end connections).			
	Fire Resistance	As per BS EN 1359:1999/ BS 4161 or Equivalent.			
Index	Max Index Reading	00000.000 for G4 & G6 Meter & 000000.00 for G10 upto G25 meter.			
	Unit	M3			
	Marking on Index details	GAIL GAS LIMITED			
	Ingress Protection	IP 54 and above			
Internals	Diaphragm	Polyester fabric coated with rubber on either side of equipment for an endurance life cycle of 2000 hrs. as per EN 1359.			
	distance connection.	Center to center distance between inlet & outlet connection to be indicated by bidder at the time of bidding.			
	Other Internals	All meter internals shall be non-metallic to prevent from tampering like magnet.			
Others	Leak testing	Meter pressurized with air at 1.5 MAOP of the meter, immersed in water for observance of leakage.			
	Automatic Meter Reading System.	The gas meter should be compatible for implanting the automatic meter reading system at a later stage by retrofitting an appropriate signal transmitting device, shall be retrofittable pulse transmitter. Bidder shall have to submit details of AMR facility along with the bid and also, give a demonstration of meter to GGL/WGL.			
	Noise	Very low, Vendor to specify.			
	Test Period : Leak Testing	As per EN1359.			
	Anti Temper feature	Meter shall be provide with a device to prevent the registration of reverse flow.			
NOTE:					
1	The meter shall be approved and manufactured in accordance with the requirement of BS EN 1359:1999 or equivalent and as per the requirement of this data sheet.				
2	The Vendor shall provide calibration certificate and accuary at MAOP of the meter for flow rates : Qmax , Qmin , 0.2 Qmax , 0.1 Qmax. The Model approval should be from FCRI / DVGW or equivalent authorities.Dial plate shall be marked with EEC/MID marking upto 3 points.				
3	<p>The Vendor shall submit, along with the offer, the manufacturing standards, model number, performance curve, approvals of the statutory bodies and technical details of the model offered. The offered meters shall be from approved vendor list of WGI/GGL</p> <p>a) Dimensional outlet with mounting details with model number, Part list and technical literatures.</p> <p>b) Connection by purchaser.</p> <p>c) Installation, Operation and Maintenance Instruction manual.</p> <p>d) Testing and Inspection Procedure</p> <p>e) Test, Calibration and certificate from statutory bodies.</p> <p>f) Test certificate covering each meter supplied conforming the accuracy of registration in accordance with the requirement of BS EN 1359:99 or equivalent.</p>				
4	End connections shall be provided by plastic caps.				
5	The meters shall be indelibly marked with details of maximum flow, direction of flow ,maximum operating pressure, name of manufacturer, model serial number, date of manufacturing etc along with name of client: GGL.				
6	Flow capacity in SCMH shall be calculated considering maximum outlet pressure & operating Temperature.				
Table for Flow Capacity					
S NO.	Commercial Diaphragm Meter	Maximum & Minimum Flow Capacity		Quantity	
1	G4	6.0 m3/hr (MAX.) / 0.04 m3/hr(MIN.)		As per MR/ SOR of Tender	
2	G6	10.0 m3/hr (MAX.) / 0.06 m3/hr(MIN.)			
3	G10	16.0 m3/hr (MAX.) / 0.1 m3/hr(MIN.)			
4	G16	25.0 m3/hr (MAX.) / 0.16 m3/hr(MIN.)			
5	G25	40.0 m3/hr (MAX.) / 0.25 m3/hr(MIN.)			
		DATA SHEET FOR COMMERCIAL METER		Document No.	Rev.
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		CITY GAS DISTRIBUTION PROJECT			
TECHNICAL DATA SHEET FOR PRESSURE REGULATOR -TYPE 1					
General	Service	Natural Gas			
	Quantity	As per MR / SOR of Tendor			
	Design	Direct acting spring control pressure regulator with in-built 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.			
	Connection Orientation	Inline Inlet and Outlet Connection			
	Installation	Suitable for Out Door Installations, tamper proof and corrosion resistance for a life period of 20 years			
	Installation Position	Horizontal / Vertical			
Flow	Flow capacity ,	10.0 M3/Hr.			
Pressure & Temperature	Inlet Pressure	1.0 bar(g) to 4 bar(g)			
	Design Pressure	5 bar(g)			
	Outlet Pressure	80-110 mbar(g)			
	Outlet pressure set point	110 mbar(g) (Factory Set Point) (Spring Range 100-500 mbar).Bidder shall necessarily submit the performance curve.			
	Over Pressure cut of point	(+10% of Set Point			
	Under Pressure Cut of Point	(-) 10% of Set Point			
	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 40 ° C , Testing Temperature-60 ° C			
Body	Casing	Casing and Body of 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 conforming to ANSI B1.20.1(Incase of end connections are differing bidder to provide suitable adaptores of same material of regulator & of approved quality to meet the specified end connections)			
	Fire Resistance	As Applicable			
Internals	Diaphragm	Synthetic Rubber (Reinforced)			
	Internals	Internals parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminium			
Others	Filter	Essential (Inbuilt)			
	Accuracy Class	AC 5 / RG 5.(Vendor to Specify)			
	Closing Pressure	SG 10.(Vendor to Specify)			
	Failure Pressure	Closed			
	Type of Reset	Manual (Vendor to Specify)			
Line Size	inlet 1" and outlet 1.5" (For different size regulator , adpoter shall be in vender scope of supply)				
NOTE:					
1	The regulator shall be indelibly marked with details of maximum Flow, inlet and outlet Pressure 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 curve, approvals of the statutory bodies and technical details of the model offered. The offered regulators shall be from approved vendor list of WGI/GGL				
	a) Dimensional outlet with mounting details with model number, Part list and technical literatures.				
	b) Connection by purchaser.				
	c) Installation, Operation and Maintenance Instruction manual.				
	d) Testing and Inspection Procedure				
3	e) Test, Calibration and certificate from statutory bodies Certificate.				
	End connections shall be provided by plastic caps.				
	Regulator shall be sized considering minimum inlet pr. and maximum outlet pressure of set range.				
	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.				
		DATA SHEET FOR PRESSURE REGULATOR TYPE-1		Document No. 11-0290-02-11-02-006 SHEET 1 of 1	Rev. 1

		CITY GAS DISTRIBUTION PROJECT			
TECHNICAL DATA SHEET FOR PRESSURE REGULATORS -TYPE 2					
General	Service	Natural Gas			
	Quantity	As per MR / SOR of Tendor			
	Design	Direct acting spring control pressure regulator with in-built 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.			
	Connection Orientation	Inline Inlet and Outlet Connection			
	Installation	Suitable for Out Door Installations, tamper proof and corrosion resistance for a life period of 20 years			
	Installation Position	Horizontal / Vertical			
Flow	Flow capacity ,	25.0 M3/Hr.			
Pressure & Temperature	Inlet Pressure	1.0 bar(g) to 4 bar(g)			
	Design Pressure	5 bar(g)			
	Outlet Pressure	80-110 mbar(g)			
	Outlet pressure set point	110 mbar(g) (Factory Set Point) (Spring Range 100-500 mbar).Bidder shall necessarily submit the performance curve.			
	Over Pressure cut of point	(+10% of Set Point			
	Under Pressure Cut of Point	(-) 10% of Set Point			
	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 40 ° C , Testing Temperature-60 ° C			
Body	Casing	Casing and Body of 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 conforming to ANSI B1.20.1(In case of end connections are differing bidder to provide suitable adaptores of same material of regulator & of approved quality to meet the specified end connections)			
	Fire Resistance	As BS 4161			
Internals	Diaphragm	Synthetic Rubber (Reinforced)			
	Internals	Internals parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminium			
Others	Filter	Essential (Inbuilt)			
	Accuracy Class	AC 5 / RG 5.(Vendor to Specify)			
	Closing Pressure	SG 10.(Vendor to Specify)			
	Failure Pressure	Closed			
	Type of Reset	Manual (Vendor to Specify)			
Line Size	inlet 1" and outlet 1.5" (For different size regulator , adpoter shall be in vender scope of supply)				
NOTE:					
1	The regulator shall be indelibly marked with details of maximum Flow, inlet and outlet Pressure 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 curve, approvals of the statutory bodies and technical details of the model offered. The offered regulators shall be from approved vendor list of WGI/GGL				
	a) Dimensional outlet with mounting details with model number, Part list and technical literatures.				
	b) Connection by purchaser.				
	c) Installation, Operation and Maintenance Instruction manual.				
	d) Testing and Inspection Procedure				
3	e) Test, Calibration and certificate from statutory bodies Certificate.				
	End connections shall be provided by plastic caps.				
	Regulator shall be sized considering minimum inlet pr. and maximum outlet pressure of set range.				
	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.				
		DATA SHEET FOR PRESSURE REGULATOR TYPE-2		Document No. 11-0290-02-11-02-007 SHEET 1 of 1	Rev. 1



CITY GAS DISTRIBUTION PROJECT



TECHNICAL DATA SHEET FOR PRESSURE REGULATOR -TYPE 3

General	Service	Natural Gas
	Quantity	As per MR / SOR of Tendor
	Design	Direct acting spring control pressure regulator with in-built 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.
	Connection Orientation	Inline Inlet and Outlet Connection
	Installation	Suitable for Out Door Installations, tamper proof and corrosion resistance for a life period of 20 years
	Installation Position	Horizontal / Vertical
Flow	Flow capacity ,	40.0 M3/Hr.
Pressure & Temperature	Inlet Pressure	1.0 bar(g) to 4 bar(g)
	Design Pressure	5 bar(g)
	Outlet Pressure	80-110 mbar(g)
	Outlet pressure set point	110 mbar(g) (Factory Set Point) (Spring Range 100-500 mbar).Bidder shall necessarily submit the performance curve.
	Over Pressure cut of point	(+10% of Set Point
	Under Pressure Cut of Point	(-) 10% of Set Point
	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 40 ° C , Testing Temperature-60 ° C
Body	Casing	Casing and Body of 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 conforming to ANSI B1.20.1(Incase of end connections are differing bidder to provide suitable adaptores of same material of regulator & of approved quality to meet the specified end connections)
	Fire Resistance	As Applicable.
Internals	Diaphragm	Synthetic Rubber (Reinforced)
	Internals	Internals parts shall be Stainless steel, Brass seal of Nitrile rubber or aluminium
Others	Filter	Essential (Inbuilt)
	Accuracy Class	AC 5 / RG 5.(Vendor to Specify)
	Closing Pressure	SG 10.(Vendor to Specify)
	Failure Pressure	Closed
	Type of Reset	Manual (Vendor to Specify)
Line Size	inlet 1" and outlet 1.5" (For different size regulator , adpoter shall be in vender scope of supply)	
NOTE:		
1	The regulator shall be indelibly marked with details of maximum Flow, inlet and outlet Pressure 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 curve, approvals of the statutory bodies and technical details of the model offered. The offered regulators shall be from approved vendor list of WGI/GGL	
	a) Dimensional outlet with mounting details with model number, Part list and technical literatures.	
	b) Connection by purchaser.	
	c) Installation, Operation and Maintenance Instruction manual.	
	d) Testing and Inspection Procedure	
	e) Test, Calibration and certificate from statutory bodies Certificate.	
3	End connections shall be provided by plastic caps.	
4	Regulator shall be sized considering minimum inlet pr. and maximum outlet pressure of set range.	
5	SS tubing of appropriate size for impulse connection of regulator and slam shut valve to be supplied with suitable connectors wherever applicable.	



DATA SHEET FOR PRESSURE REGULATOR
TYPE-3

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CLIENT:		GAIL GAS LIMITED		CITY GAS DISTRIBUTION				
QUANTITY: As Per MR /SOR of Tendor								
DATA SHEET FOR PRESSURE REGULATOR-TYPE 4								
	1	Service		Down Stream Pressure Regulation				
BODY	2	Type of Regulator		Self Actuated Pilot Operated With Inbuilt Slam Shut Valve				
	3	Body Size	Port Size	*	*			
	4	End Connection: Size & Rating		Flanged & (*)				
	5	Facing & Finish		RF serrated / 125 AARRH				
	6	Body Material		ASTM A216 Gr WCB or better				
	7	Diaphragm Material		Nitrile				
	8	Trim, plug Material		SS				
	9	Other Wetted Parts		SS				
	10	Leakage Class		CLASS-VI as per ANSI/FCI 70.2				
	11	Impulse Connection		EXTERNAL				
	12	Valve Set Point		As per P&ID.				
	13	Regulation Accuracy		±2.5% of the Set point (Note-2)				
	OPTIONS	14	Failure position		Closed			
15		Limit Switch		Not Required				
16		Radiography		*				
17		Charpy V- Notch Test		*				
18		Impulse Tubing/ Fittings		Required				
19		Installation		Horizontal				
SERVICE CONDITIONS	20	Pressure Indicator		Under Pressure Gauge Scope				
	21	Fluid	State	Natural Gas	Gas			
	22	Flow Gas - Min./Normal/Max.		Min.-100 SCMD & Max. 500 SCMD				
	23	Inlet pressure		14-19 bar(g)				
	24	Outlet pressure		1-4 bar(g)				
	25	Shut Off Pressure		*				
	26	Temperature-Oper.	Max.	25	35			
	27	Oper S.G	Mol. Wt.	0.65-0.7	*			
28	Cp/Cv	Compress. Factor	*	*				
VALVE DATA	29	Kg or Cg Min.	Kg or Cg Max.	*	*			
	30	Kg or Cg Nor.	Selected Kg or Cg	*	*			
	31	Predicted sound level dBA		< 85 dBA				
	32	Inlet Velocity m/s		< 40 m/sec.				
MAKE & MODEL NO.	33	Valve		*				
	34	Pilot		*				
	35	Failure Position		Fail to Close				
NOTES :- (*) Vendor to furnish								
1	Set Point of the regulator shall be adjustable. Vendor shall furnish the adjustable range of the pilot.							
2	Accuracy of the pressure regulation shall be better than or equal to± 2.5 % of the set pressure for the entire inlet pressure and flow range							
3	Monitor valve with integral slam-shut valve shall be fail close type.							
4	Pressure drop across the valve shall be selected by the vendor considering the Maximum Pressure drop permitted across the skid, given setpoints (staggered set point of the two regulators and the slam shut valves) and the given inlet / outlet pressure conditions.							
5	Regulator shall be sized to deliver the maximum flow at minimum differential pressure and the minimum flow at the maximum differential pressure.							
6	The Inlet pressure variation is possible for all the flow rates and the Valve to be sized accordingly.							
7	In case valve noise level for the worst case of the given process conditions exceeds 85 d BA (flange to flange of the valve)vendor shall provide and include the noise treatment with silencer/ expander.							
8	The Pilot shall be supplied suitable for the set point of complete output pressure range. Preferably one pilot shall cater the complete range,however if it is not feasible then additional springs! pilot to be provided to cater the complete outlet pressure range.							
9	Standard for Pressure Regulating valve is EN334 and designed as complied with PED Annex III, Module B no. 97/23/EC for Regulator and SSV to be provided for along with Module D. PED Certs to be provided for separately for Integral Slam Shut.							
		DATA SHEET FOR PRESSURE REGULATOR VALVES WITH INTEGRAL SLAM-SHUT-TYPE 4				DOCUMENT NO.		Rev.
						11-0290-02-11-02-009		1
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	CITY GAS DISTRIBUTION PROJECT		
TECHNICAL DATA SHEET FOR SMART DOMESTIC DIAPHRAGM METERS			
General	Service	Natural Gas	
	Standard	Approved to EEC and OIML Standard. Note:1	
	Connection Orientation	Top Side Inlet & outlet type. Quantity as per MR / SOR of tender	
	AMR Facility	Automated Meter Reading Facility with Hand-held Configurator.	
	Installation	Suitable for Out Door/In-door Installations, tamper proof and corrosion resistance for a life period of 20 years.	
Process Condition	Q max.	2.5 m3/hr	
	Q min.	0.016 m3/hr	
	Accuracy Class	± 3% (3Qmin. to 0.1 Qmax.) , ±1.5% (0.2 Qmax. to Qmax.) as per EN1359.	
	Range Ability	1:150 or better	
	Operating Pressure	21 - 24 mbar (g)	
	Pressure loss	Less than 2 mbar (g)	
	Design Pressure	500 mbar (g)	
	Specific Gravity	0.6	
Operating Temperature	0 degree C to 60 degree C		
Body	Case work / body	Casing and Body of steel conforming to ASTM A216 WCB and water proof.	
	Corrosion Protection	All part of the meter shall be corrosion resistant & suitable coating on inside and out side casing.	
	End Connections	3/4" NPT inlet and outlet conforming to ANSI B1.20.1 (in case the end connections are differing, bidder to provide suitable adopter of approved quality to meet the specified end connections).	
	Fire Resistance	As per BS EN 1359:1999/ BS 4161 or Equivalent.	
Index	Max Index Reading	0 0000.000	
	Unit	CM(Cubic Meter)	
	Marking on Index details	GAIL GAS LIMITED	
	Ingress Protection	IP 54 and above	
Internals	Diaphragm	Polyester fabric coated with rubber on either side of equipment for an endurance life cycle of 80,000 m3.	
	Other Internals	All meter internals shall be non-metallic to prevent from tampering like with magnet.	
Others	Leak testing	Meter pressurized with air at 1.5 MAOP of the meter, immersed in water for observance of leakage.	
	Automatic Meter Reading System.	The gas meter should be compatible for implanting the automatic meter reading system at a later stage by retrofitting an appropriate signal transmitting device, shall be retrofittable pulse transmitter.	
	Noise	Very low, Vendor to specify.	
	Anti-Temper Feature	Reverse Registration Restriction.	
	Air Proof ability	No leakage	
	Cyclic Volume	Vendor to furnish	
	Test Period : Leak Testing	Vendor to furnish (As per EN1359).	
	Permissible error	Vendor to furnish	
NOTE:			
1	The meter shall be approved and manufactured in accordance with the requirement of BS EN 1359:1999 or equivalent and as per the requirement of this data sheet.		
2	The Vendor shall provide calibration certificate and accuracy at MAOP of the meter for flow rates of Qmax 0.1 Qmax. Its model approval should be from FCRI or DVGW or equivalent authorities.		
3	<p>The Vendor shall submit, along with the offer, the manufacturing standards, model number, performance curve, approvals of the statutory bodies and technical details of the model offered. The offered meters shall be from approved vendor list of WGI/GGL.</p> <p>a) Dimensional outlet with mounting details with model number, Part list and technical literatures.</p> <p>b) Connection by purchaser.</p> <p>c) Installation, Operation and Maintenance Instruction manual.</p> <p>d) Testing and Inspection Procedure</p> <p>e) Test, Calibration and certificate from statutory bodies.</p> <p>f) Test certificate covering each meter supplied conforming the accuracy of registration in accordance with the requirement of BS EN 1359:99 or equivalent.</p>		
4	End connections shall be provided by plastic caps.		
5	The meters shall be indelibly marked with details of maximum flow, direction of flow, maximum operating pressure, name of manufacturer, model serial number, date of manufacturing etc along with name of client: GAIL GAS LIMITED.		
6	Center to center distance between inlet & outlet connection should be 110 mm.		
7	Flow capacity in SCMh shall be calculated considering maximum outlet pressure & operating Temperature.		
	DATA SHEET FOR SMART DOMESTIC METER	Document No. 11-0290-02-11-02-010	Rev. 1
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