



**Procurement of SS TUBES, BALL VALVES,
FITTINGS & THERMO PLASTIC HOSES for
construction of CNG Stations in Hyderabad,
Vijayawada & Kakinada**

VOLUME
II OF II

Bid Document No. BGL/357/2017-18



BHAGYANAGAR GAS LIMITED
(A JOINT VENTURE OF HPCL & GAIL)

BID DOCUMENT FOR

**Procurement of SS TUBES, BALL VALVES, FITTINGS &
THERMO PLASTIC HOSES for construction of CNG Stations
in Hyderabad, Vijayawada & Kakinada**

**UNDER LIMITED DOMESTIC
COMPETITIVE BIDDING**

Bid Document No.: BGL/357/2017-18

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MATERIAL REQUISITION



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MATERIAL REQUISITION

		A.MATERIAL REQUISITION	Requirement				
S/N	Items	Specifications	UOM	Hyderabad	Vijayawada	Kakinada	Total
I	Group-A						
1	SS Union 3/4" OD X 3/4" OD	Tube OD 3/4" x Tube OD 3/4", Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	30	135	0	165
2	SS Union 1/2"OD X 1/2" OD	Tube OD 1/2" x Tube OD 1/2", Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	20	25	0	45
3	SS Union Tee 3/4" OD X 3/4" OD X 3/4" OD	Tube OD 3/4" X 3/4" OD X 3/4" OD, Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	40	22	10	72
4	SS Union Tee 1/2" OD X 1/2" OD X 1/2" OD	Tube OD 1/2" X 1/2" OD X 1/2" OD, Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	5	6	0	11
5	SS Reducing Union 1" OD X 3/4" OD	Tube OD 1" x Tube OD 3/4", Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	42	30	20	92



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6	SS Nut 1" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	5	0	0	5
7	SS Front Ferrule 1" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	12	10	8	30
8	SS Back Ferrule 1" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	12	10	8	30
9	SS Nut 3/4" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	100	170	75	345
10	SS Front Ferrule 3/4" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	50	170	60	280
11	SS Back Ferrule 3/4" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	50	170	60	280
12	SS Nut 1/2" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	0	45	20	65
13	SS Ferrule set 1/2" OD containing Front & back Ferrule	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	10	50	20	80



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14	SS Connector for 3/8"OD tubes to 1/4" NPT(M) connection on other end	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	4	0	0	4
15	SS Connector for 3/8"OD tubes to 1/2" NPT(M) connection on other end	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	4	0	0	4
16	SS UNION CROSS 3/4" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	0	9	3	12
17	SS UNION CROSS 1/2" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	0	9	4	13
18	SS CHECK VALVE 3/4" OD ENDS	Cracking Pressure: 1 psi, Hydrostatic test according to NC-23; Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	23	13	10	46
19	SS QUICK CONNECTOR BODY, 1/2" NPT(F)	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	20	17	10	47
20	SS QUICK CONNECTOR STEM, 1/2" TUBE OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	NO	10	6	4	20
II	Group-B						
1	2 WAY BALL VALVE, SS, 3/4" OD-TRUNION	Material : SS316 (Rated pressure : 344 BAR Temperature : -40 to 121 DEG C), PEEK SEATS; Hydrostatic tested	NO	100	77	25	202
2	2 WAY BALL VALVE, SS, 1/2" OD-TRUNION	Material : SS316 (Rated pressure : 344 BAR Temperature : -40 to 121 DEG C), PEEK SEATS; Hydrostatic tested	NO	30	24	0	54
3	3 WAY BALL VALVE, SS, 1/2" OD X 1/2" OD X 1/4" FNPT	Material : SS316 (Rated pressure : 344 BAR Temperature : -40 to 121 DEG C), PEEK SEATS; Hydrostatic tested	NO	38	27	5	70



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III	Group-C						
1	SS NG SERIES CONDUCTIVE CORE HOSE- 3/8" OD	SS NG SERIES CONDUCTIVE CORE HOSE- 3/8" OD; 60" OVERALL LENGTH WITH HYDROSTAIC TEST	NO	25	20	10	55
IV	Group-D						
1	1/2"OD X 0.083" WT,SS316,	ASTM A 269 TP316,TOLERANCE(+0.005"),FINISH-FULLY ANNEALED SEAMLESS,HARDNESS-Rb<80	MTR S	250	220	0	470
2	3/4"OD X 0.095" WT,SS316	ASTM A 269 TP316,TOLERANCE(+0.005"),FINISH-FULLY ANNEALED SEAMLESS,HARDNESS-Rb<80	MTR S	1535	1175	600	3310
3	1"OD X 0.120" WT,SS316	ASTM A 269 TP316,TOLERANCE(+0.005"),FINISH-FULLY ANNEALED SEAMLESS,HARDNESS-Rb<80	MTR S	300	175	135	610

➤ Exact delivery location (s) will be intimated after placement of PO.



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B.REMARKS / COMMENTS

1. GENERAL NOTES

VENDOR's Compliance

Vendor shall submit his bid in full compliance with the requirements of this MR and attachments.

Vendor must 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. COMPLIANCE WITH SPECIFICATION

The vendor shall be completely responsible for the design, materials, fabrication, testing, inspection, preparation for shipment and transport of above equipment strictly in accordance with the Material Requisition and all attachments thereto.

3. VENDOR'S SCOPE

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

4. INSPECTION

Vendor shall appoint anyone of the following TPIA for inspection purpose after approval by purchaser:

- a) Lloyd Register of Industrial Services
- b) TechnischeUlierwachungsVerein (TUV) SUD South Asia
- c) International Certification Service Pvt. Ltd
- d) TQ Services
- e) Moody International (India) Pvt. Ltd
- f) Bureau Veritas (India) Pvt. Ltd
- g) SGS
- h) Quality Services and Solutions Pvt. Ltd.
- i) Velosi Certification Services
- j) Certification Engineers International Ltd

Apart from inspection by TPIA, inspection shall also be performed by BGL delegate, as set out and specified in the codes and particular documents forming this MR.

5. APPLICABLE DOCUMENTS

General prescriptions, requirements and information are listed in Annexure of this Material Requisition.

6. VENDOR'S DOCUMENTS

Vendor shall supply the documentation as listed under Documents & Data Requirements of Material Requisition.

All documents shall be supplied in English language.



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DOCUMENTS & DATA REQUIREMENTS

The table hereunder specifies the quantities and the nature of the documents to be submitted by the BIDDER/SUPPLIER VENDOR to the ENGINEER-IN-CHARGE (EIC)

The documents required at the inquiry stage and to be included in the bid are listed under column A. The documents required after award of the AGREEMENT and subject to the written approval of the EIC are listed under column B.

The final and certified documents are listed under column C.

Any document even when preliminary shall be binding and therefore duly identified and signed by the BIDDER/SUPPLIER/VENDOR. It shall bear the EIC's project reference the material requisition number and the identification number.

THE DOCUMENTS ARE FULLY PART OF THE SUPPLY WHICH SHALL BE COMPLETE ONLY IF AND WHEN THE DOCUMENTS COMPLYING FULLY WITH THE MATERIAL REQUISITION REQUIREMENTS ARE RECEIVED BY THE ENGINEER-IN-CHARGE.

Item	Documents and Data	A			B		C	
		No. of copies	No. of copies	Required Date	No. of copies	Required Date		
1.	Copy of ISO certification for supplier/manufacture	2	-	-	2	Along with dispatch/shipment		
2.	Technical descriptive catalogue (for information)	2	2	2 weeks	2	Along with dispatch/shipment		
3.	General Arrangement/assembly drawing of valve showing all features	2	2	2 weeks	2	Along with dispatch/shipment		
4.	QA/QC Program (SS Ball valve, SS Fittings, SS Tubes)	2	2	2 weeks	2	Along with dispatch/shipment		
5.	Compliance to Tender QCT	2	2	2 weeks	2	Along with dispatch/shipment		
6.	Manufactures' test certificates		2	-	2	Along with dispatch/shipment		
7.	Heat Treatment Reports		2	When available	2	2 weeks after approval with final technical file		
8.	Hydrostatic and Air test Report		2	1 weeks after test	2	Along with dispatch/shipment		
9.	Packing / Shipping list / weight and Dimensions		2	4 weeks	2	2 weeks before shipping		
10.	Material certificate		-	-	2	Along with dispatch/shipment		
11.	Final technical file		-	-	2	Before claim of final payment		

Notes:

- 1) Documents listed in column A is required to be submitted during bid time (1 original+2 copies). Durations in column B (Required date) are weeks after purchase order / LOA date



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ore as indicated in table. Durations in column C (Required date) are weeks after document approval or as indicated in table. Due date of each document may be proposed.

2) Latest submittal time for:

- Test procedure : 2 weeks before test
- Test report : 2 weeks after test

3) Final technical file shall be supplied in hard copy as indicated, and in electronic format

(.pdf acrobat files) on 3 (three) CD-ROMs to BGL



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SECTION – 8

SPECIAL CONDITIONS OF CONTRACT (SCC)



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SPECIAL CONDITIONS OF CONTRACT (SCC)

1.0 GENERAL

- 1.1 Special Conditions of Contract shall be read in Conjunction with the General Conditions of Contract, Specification of work, Drawing and any other documents forming part of this Contract wherever the context so requires.
- 1.2 Notwithstanding the sub-division of the documents into these separate sections and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read within the Contract so far as it may be practicable to do so.
- 1.3 Where any portion of the General Conditions of Contract is repugnant to or at variance with any provisions of the Special Conditions of Contract, unless a different intention appears, the provisions of the Special Conditions of Contract shall be deemed to over-ride the provisions of the General Conditions of Contract and shall be the extent of such repugnancy, or variations, prevail.
- 1.4 Wherever it is mentioned in the specification that the Contractor shall perform certain work or provide certain facilities, it is understood that the Contractor shall do so at his cost and the Value of Contract shall be deemed to have include cost of such performance and provisions, so mentioned.
- 1.5 The materials, design, and workmanship shall satisfy the relevant Indian Standard, the Job Specifications contained herein and Codes referred to. Where the job specification stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.
- 1.6 In case of an irreconcilable conflict between Indian or other applicable standards, General Conditions of Contract, Special Conditions of Contract, Specification, Drawings or Schedule of Rates, the following shall prevail to the extent of such irreconcilable conflict in order of precedence:
- i) Letter of Acceptance/ FOI along with Statement of Agreed Variations.
 - ii) Schedule of Rates as enclosures to Letter of Acceptance
 - iii) Special Conditions of Contract
 - iv) Drawings
 - v) Technical/ Material Specifications
 - vi) Instruction to Bidder
 - vii) General Conditions of Contract
 - viii) Indian Standards
 - ix) Other applicable standards
- 1.7 It will be the Contractor's responsibility to bring to the notice of Engineer-in-charge any irreconcilable conflict in the contract documents before starting the work(s) or making the supply with reference which the conflict exists.
- 1.8 In the absence of any Specifications covering any material, design of work(s) the same shall be performed/ supplies/ executed in accordance with Standard Engineering



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Practice as per the instructions/ directions of the Engineer-in-charge, which will be binding on the Contractor.

2.0 SCOPE OF SUPPLY

2.1 The Scope of Work shall include supply of *SS Tubes, Ferrule Fittings, SS Valves & Hoses* as applicable on FOT Site Basis and shall be as set out at MR Section-8, Technical Specifications for SS Ferrule Fittings, SS Ball Valves & Thermoplastic hoses given in Section-10 (A); (B), (C) & (D) of Volume-II of tender document and supplemented by all stipulation in the total tender document.

2.2 REMARKS

2.2.1 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:
Compliance with this material Requisition in any instance shall not relieve the Vendor of his responsibility to meet the specified performance.

2.2.2 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.

3.0 TERMS OF PAYMENTS

The Payment shall be made progressively against receipt of each lot at site within 15 days from receipt of bills in the following manner.

- a) 90% of supply value will be paid against receipt and acceptance of material by Owner & against receipt of the following documents : -
 - i) Invoice in triplicate.
 - ii) Inspection Release note by Owner or approved agency.
 - iii) GR/ LR.
 - iv) Packing List.
 - v) Insurance cover note covering transit insurance.
 - vi) A certificate from manufacturer that the all items/ equipment under supply including its component or raw material used with manufacturing are new and conform to the tender requirement. In case manufacturer is not the contractor this certificate will duly be endorsed by the contractor owning overall responsibility.
 - vii) Final technical file as per Technical Specifications/ Material Requisition including all test certificates.
 - viii) Performance Bank Guarantee(s) of 10% of Contract Value. If already submitted, a copy of the same.
 - ix) Document related to CENVAT credit to be claimed by Owner, if applicable.
 - x) Documents as specified in the Technical Specifications/Material Requisition, Volume-II of II of the Bid Document.



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- b) 10% of supply value on completion of all works and final acceptance by the owner and submission of the following documents.
- i) Acceptance Certificate.
 - ii) No Claim Certificate.

4.0 INLAND TRANSIT INSURANCE FOR PROCUREMENT OF GOODS

Bidder shall arrange Transit Insurance and the cost of which shall be borne by bidder. Quoted price shall be inclusive of the same. Bidder will be required to submit documentary proof for the transit insurance before despatch.

5.0 LOCATION & ADDRESS OF PROJECT CONSIGNEE & STORES:

The delivery of the items shall be at Hyderabad, Vijayawada & Kakinada as per the Material Requisition. The location of the store shall be informed before dispatch of items.

6.0 DURATION OF THE CONTRACT:

12 weeks from the date of placement of purchase order (PO). Prices quoted to remain valid and firm for the entire duration of the contract.

7.0 SECURITY DEPOSIT/ CONTRACT PERFORMANCE GUARANTEE:

As per GCC.

8.0 PRICE REDUCTION SCHEDULE FOR DELAYED DELIVERY (PRS/ LD):

The price reduction schedule shall be @ 0.5% per week of delay or part thereof subject to maximum of 5% of total undelivered portion of contract value.

Price reduction for failure to meet technical parameters as mentioned in technical specification shall be separately applicable and shall be in addition to price reduction on account of failure of completion of supply.

9.0 GUARANTEE:

As per GCC.

10.0 PRICE ESCALATION:

The Contract price shall be deemed to be FIRM and valid for the entire duration of the contract till the completion of work and shall not be subjected to any adjustment due to increase in price of material, utilities or any other input for performance of work and the contract except for increase/decrease in taxes and duties on account of subsequent legislation.

11.0 QUANTITY VARIATION:

BGL reserves the right to operate any SOR for the full quantities or part quantities or nil quantities as per the site conditions without assigning any reason. In this case; BGL's



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decision will be final and binding. BGL reserves the right to vary the quantity of any SOR without any change in terms and conditions.

12.0 DISPATCH INSTRUCTIONS

- 12.1 Seller shall obtain dispatch clearance from Purchaser prior to each dispatch.
- 12.2 Copy of Inspection Release Certificate, Dispatch Clearance and Statement showing the LR, packing list and weight of material and shipping marks etc. to be submitted along with the dispatch document.

13.0 REJECTION

- 13.1 Any materials/goods covered under the scope of supply, which during the process of Inspection, at any stage of manufacture/fabrication, and subsequent stages, prior to dispatch is found not conforming to the requirements/specifications of the Purchase Order, shall be liable for immediate rejection.
- 13.2 Supplier shall be responsible and liable for immediate replacement of such material with acceptable material at no extra cost to BGL and no extra on the delivery schedule to Employer.



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SECTION – 9
TIME SCHEDULE



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TIME SCHEDULE

FOT Hyderabad/ Vijayawada/Kakinada site basis.

The delivery schedule for all SS Tubings, Fittings, Ball Valves and Thermoplastic Hoses shall be within 12 weeks from date of LOI/PO.

The bidder must give unconditional confirmation to Time Schedule.

Signature of Authorized Signatory:.....

Name:.....

Designation:.....

Seal:.....



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SECTION – 10

**TECHNICAL SPECIFICATIONS
Group-A .SS FERRULE / FITTINGS**



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1.0 SCOPE OF SUPPLY

1.1 The scope of this specification covers the requirement of design, manufacture/ inspection/ testing at works/ marking/ packaging/ and supply of high pressure SS Ferrule Fittings.

2.0 CODES & STANDARD

The latest edition of the following standards are referred to in this specification.

Items	Applicable Codes and Standards
Bar Stock	ASME SA-479-316 or DIN 4401 or BS:970-316-S31
Forging	ASME SA-182-316 or DIN 4401 or BS:970-316-S31
Thread	NPT ANSI B 1.20.1

3.0 PRECEDENCE

3.1 In case of any conflict between this job specification and other document, the following order of precedence shall apply :

3.1.1 Job Specification.

3.1.2 International Standards/ Codes Applicable.

4.0 DEVIATION

Deviations if any required by Tenderer shall be separately furnished against each clause giving reasoning for each deviation. Tenderer to note that except the deviations furnished by them, Tenderer's offer shall be deemed to be in total conformity with the enquiry specifications.

5.0 SPECIFICATION

All the items shall be suitable for compressed Natural Gas service and meet following specifications.

5.1 Materials

5.1.1 Fittings shall be manufactured from the following materials :-

- i) Bar stock shall be as per BS:970-316-S31, DIN 4401 or ASME 479-316 but with carbon content less than 0.05% to provide increased resistance to corrosion.
- ii) Forgings shall be as per BS:970-316-S31, DIN 4401 or ASME SA-182-316.

5.1.2 The fittings end connections shall be compatible to tube of hardness \leq Rb80.

5.1.3 All component parts of the fittings shall be of the same material.

5.1.4 The ferrule material shall be able to withstand an atmosphere of Natural Gas, oil and moisture without rusting.



5.2 Design & Manufacture

- 5.2.1 All fittings shall be designed in conformance with the requirements of ASME B31.3 and applicable standards. Area classification applicable for all items shall be Class-1, Division-1, Group-D as per NEC or Zone-1 Group-IIA/ IIB as per IS/ IEC specification or equivalent specification. All fittings shall be designed so that all parts/ components meet the requirements for the specified area classification.
- 5.2.2 The SS fittings shall be of flareless design and four piece construction, consisting of front and rear ferrules, nut and body suitable for use on SS tubes conforming to ASTM A269 TP316.
- 5.2.3 Fittings shall be rated for at least the design pressure as stipulated in the material requisition. The design of fittings shall ensure that they shall be capable of holding full tube burst pressure after only one and a quarter turn pull up of the nut.
- 5.2.4 The threaded ends of fittings shall be NPT as per ANSI B1.20.1.
- 5.2.5 The fittings shall hold the tube with collecting action producing a firm grip on the tube without substantially reducing the tube wall thickness.
- 5.2.6 Fittings shall not torque the tubing during original or subsequent make-up of the connection and should use geometry for inspection before and after make up the fittings shall not require disassembly for inspection before or after makeup.
- 5.2.7 All tube fittings shall be guageable for sufficient pull up after one and a quarter turn. All tube fittings shall have a guageable shoulder and there will be no radius at the point where the shoulder meets the neck of the fitting body.
- 5.2.8 The gap inspection gauge shall be easily insertable at finger tight position of nut. The gap inspection gauge shall not be insertable between the nut and shoulder of the fitting after completing only one and a quarter turn pull up of the nut.
- 5.2.9 The tube seat counter bore in the body shall be faced flat 90° to the axis of the tubing to minimize tube expansion and subsequent galling.
- 5.2.10 The sealing and gripping power of the fitting shall be controlled such that the action between ferrules will overcome commercial variations in tubing wall thickness, hardness, diameter and installer skill.
- 5.2.11 The seal contact areas of the fittings body shall have a machined finish of 32 Ra or better.
- 5.2.12 The fittings body shall have no machined stop or shoulder to preclude additional tightening in subsequent make-up.
- 5.2.13 Front Ferrule**
- i) The front ferrule shall effect a long, smooth repeatable seal by contact with body and a grip hold on the tube surface.



- ii) The front ferrule shall always remain in a sprung condition to compensate for thermal stresses and to accomplish repeated make and break.

5.2.14 Rear Ferrule

- i) The rear ferrule shall collect the tubing surface, improving the performance of the tubing in systems of high impulse or vibration.
- ii) The rear ferrule shall have a machine recess on the inside diameter and shall have complete surface hardening so as to substantially reduce the required pull up torque. Both the requirements i.e. complete surface hardness and machined recess shall be met for all rear ferrules.

5.2.15 Nuts shall have silver plated threads to act as a lubricating agent to avoid galling and to reduce tightening torque.

5.3 Inspection and Testing

5.3.1 The manufacturer shall submit typical type test reports for the following test carried out on random samples of two ferrule fittings :-

- i) Hydraulic burst pressure test.
- ii) Helium leak test under 0.0002 PSIA negative pressure, leaks into assembly greater than 4.0×10^{-9} atm-cc/sec being unacceptable.
- iii) Gas pressure test for 25 remarks at 5000 Psig. No leakage should be detectable even after 25 remarks.
- iv) Impulse & vibration testing by “rotary beam method” for **10,00,000** impulse cycles and **10 million** vibration cycles with no detectable leakage at full working pressure throughout till the end of the test.

5.4 Test Reports and Certificates

5.4.1 The manufacturer shall supply material compliance certificates conforming that the raw material for fittings conforms to the requirements of ASME Section-II and ASME Section-III sub section NB, NC and ND.

5.4.2 The manufacturer shall furnish test procedure and typical test reports of all tests conducted on fittings as per the requirements of clause 5.3.

6.0 MARKING, PACKING & SHIPMENT

- 6.1 Heat code traceability number shall be stamped or etched on both body and nut of each fitting.
- 6.2 Replacement nuts and ferrules shall be packaged in a manner so as to allow safe and simple replacement.
- 6.3 All the items shall be suitably wrapped and packaged to with stand rough handling during ocean shipment and inland journey.
- 6.4 Item shall be properly tagged and package separately to facilitate easy identification.



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6.5 Items shall be wrapped and packaged in such-a-way that they can be preserved in original as new condition.

7.0 DOCUMENTATION

7.1 All document shall be furnished in English language only.

7.2 At the time of bidding, bidder shall submit following documents :

- i) Reference list of previous supply for similar item, giving following details :
 - a) Name of the customer.
 - b) Specification of the item i.e., size and pressure & temperature rating.
 - c) Service
 - d) Quantity
 - e) Year of supply
- ii) Test procedure and typical certificates to be submitted as per clause 5.3 and 5.4 of this specification.
- iii) Manufacturer Quality Control Plan and sampling plan.
- iv) Copy of ISO:9000 certification for supplier/ manufacturer.

7.3 Following test certificates shall be furnished alongwith shipment.

- i) Test certificate of visual, chemical, mechanical testing (incl tensile, hardness, flaring, Eddy Current and leak test).
- ii) Manufacturers standard shop inspection & test report.
- ii) The procedure and certificates to be submitted as per the requirements of clause 5.4 of this specification.
- iii) Third Party Inspection report as applicable to meet the requirements of specified codes & standards as applicable

8.0 GUARANTEE

- 8.1 Manufacturer shall guarantee that the design, materials, manufacturing and testing of fittings comply with the requirement of this specification and applicable codes and standards. Manufacturer shall replace all fittings which should result defective or fail during field pressure testing or fail to perform satisfactorily due to inadequate engineering, substandard material and workmanship.
- 8.2 The manufacturer shall guarantee against any defect, failure or malfunctioning occurring during 12 months from the date of commissioning or 24 months from the date of supply whichever is earlier.

9.0 GENERAL SPECIFICATIONS FOR CHECK VALVE FOR CNG APPLICATIONS



All the items shall be suitable for compressed Natural Gas service and meet following specifications.

9.1 MATERIAL OF CONSTRUCTION

1. The valve body shall be forged / machined type made of material conforming to ASTM A479 Type 316.
2. Material of construction of Buna C bonded poppet confirm to ASTM A479 Type 316.
3. Material of construction of spring confirm to ASTM A313 Type 302.
4. Material of construction of poppet stop confirm to ASTM A240 Type 316.

9.2 DESIGN & MANUFACTURE

1. All Check valves shall be designed in conformance with the requirements of ASME B31.1 - Power Piping Code; ASME B31.3 - Process Piping Code.
2. Valves shall be rated for a maximum working pressure of 5000 psig with in temperature range of (-10) to 100 degree F.
3. Valves with ECE R110-Type approval shall be rated to 3700 psig and shall be capable of operation between a temperature range of (-40) to 185 degree F.
4. Valve should have Poppet with bonded elastomer seal.
5. Valve should have a fixed cracking pressure.
6. Valves shall indicate the direction to flow.
7. Cracking pressure: 1 psi.

9.3 INSPECTION & TESTING

1. The valve manufacturer shall submit typical test reports for the following test carried out on similar valves.
 - Hydrostatic seat leak test shall be carried out with water. There shall be no detectable seat leakage at 1.1 times the rated pressure of the valve.
 - Hydrostatic shell leak test shall be carried out with water at 1.5 times the rated pressure of the valve. There shall be no detectable external leakage. Maximum allowable seat leakage shall be 10 std cc/hr.

9.4 OTHER REQUIREMENTS

1. Manufacturer shall confirm that valves are approved ECE R110-type.
2. Spares and Accessories-
 - If required, manufacturer shall furnish a list of recommended spares and accessories for valves required during start up and commissioning.
 - If required, manufacturer shall furnish a list of recommended spares and



accessories required for two years of manual operation and maintenance of valves.

9.5 TEST REPORTS & CERTIFICATES

1. The manufacturer shall supply 'Certificate of Compliance' proving information for Material standards, Mechanical properties and Chemical analysis.
2. The valve manufacturer shall provide test procedure and valve inspection and test report for type tests carried out on similar valves as per the requirements of clause "Inspection & Testing".

9.6 MARKING, PACKING & SHIPMENT

1. Heat code shall be marked on valve body to facilitate traceability. All valves & fitting shall be roll stamped / etched to identify manufacturer and material.
2. All the items shall be suitably wrapped and packaged to withstand rough handling during ocean shipment and inland journey.
3. Each item shall be properly tagged and package separately to facilitate easy identification.
4. All items shall be wrapped and packaged in such a way that they can be preserved in original as new condition.

9.7 WARRANTY

Manufacturer & its authorized distributors should offer a comprehensive Warranty covering the performance of the product against any defects in material or workmanship for the life time of the product. A certificate to this effect must be issued on their respective Company letter head.

10.0 General Specification for Quick Connects

All the items shall be suitable for compressed Natural Gas service and meet following specifications.

10.1 MATERIAL OF CONSTRUCTION

1. The QC shall be made of SS 316 material.
2. The QC shall have the following components made of SS 316:
 - a. Spring
 - b. Snap Ring
 - c. Sleeve
 - d. Locking Balls
3. The QC shall have O-ring made of Fluorocarbon FKM which must be easily replaceable without disassembling the body.

10.2 DESIGN & MANUFACTURE



1. QC shall be compact full flow type without any orifice restriction and allow bi-directional flow.
2. QC shall have a body and stem capable of withstanding 5000 psi @ 70 deg F in the coupled position.
3. The body shall have a ½” OD Tube Fitting end connection with a recessed back ferrule design.
4. The stem shall have ½” FNPT threaded end connection.

10.3 TEST REPORTS & CERTIFICATES

1. The manufacturer shall supply material compliance certificate.

10.4 MARKING, PACKING & SHIPMENT

1. Heat code shall be marked on QC body & stem to facilitate traceability. All QCs shall be roll stamped / etched to identify series, manufacturer and material.
2. All the items shall be suitably wrapped and packaged to withstand rough handling during ocean shipment and inland journey.
3. Each item shall be properly tagged and package separately to facilitate easy identification.
4. All items shall be wrapped and packaged in such a way that they can be preserved in original as new condition.

10.5 WARRANTY

Manufacturer & its authorized distributors should offer a comprehensive Warranty covering the performance of the product against any defects in material or workmanship for the life time of the product. A certificate to this effect must be issued on their respective Company letter head.



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**TECHNICAL SPECIFICATIONS-
Group B. SS BALL VALVES**



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SCOPE OF WORK

- 1.0 The scope of this specification include design, manufacture/ supply, inspection/ testing/ marking/ packaging/ handling and dispatch of SS Ball Valves as per relevant codes.
- 1.1 Purchaser reserves the right to delete or order additional quantities during execution of order, based on unit rates and other terms & conditions in the original order.

2.0 CODES & STANDARDS

Items	Applicable Codes and Standards
Valves	MSS-SP-99

3.0 PRECEDENCE

- 3.1 In case of any conflict between this job specification and other document, the following order of precedence shall apply :
- 3.1.1 Job Specification.
- 3.1.2 International Standards/ Codes Applicable.

4.0 DEVIATION

Deviations if any required by Vendor shall be separately furnished against each clause giving reasoning for each deviation. Vendor to note that except the deviations furnished by them, Vendor's offer shall be deemed to be in total conformity with the enquiry specifications.

5.0 MATERIALS

- 5.1 The valve body shall be made out of material conforming to ASTM A479 Type 316.
- 5.2 Material of construction of ball shall conform to ASTM A276 Type 316.
- 5.3 Material of construction of seat springs shall be Alloy X-750.

6.0 DESIGN & MANUFACTURE

- 6.1 All ball valves shall be designed in conformance with the requirements of ASME B31.3, MSS-SP-99 and other applicable code and standards. Area classification applicable for all items shall be Class-1, Division-1, Group-D as per NEC or Zone-1 Group-IIA/ IIB as per IS/ IEC specification or equivalent specification. All fittings shall be designed so that all parts/ components meet the requirements for the specified area classification.
- 6.2 Valves shall be rated for a maximum working pressure of 5000 psig and shall be capable of operation between a temperature range of (-40)° to 250°F.
- 6.3 Valves shall have spring loaded PEEK seats allowing seal-ability over the full pressure range at any port and low operating torque over the full range of pressures and temperatures.
- 6.4 Elastomeric seals, which require no packing adjustment, shall be used.



- 6.5 Valves stem shall be of bottom loaded and blow out proof design.
- 6.6 Ball shall be blow out proof and trunnion mounted.
- 6.7 Valves shall have positive wrench/ handle stops, Phenolic black wrench/ handle shall be provided. Wrench/ handle shall indicate the direction to flow. IN the case of three way valves the stem shall also provided a visual indication of flow direction if the handle is removed.

7.0 INSPECTION AND TESTING

- 7.1 The valve manufacturer shall submit typical type test reports for the following test carrier out on similar valves:-
- i) Hydrostatic seat leak test shall be carried out with de-ionised water. There shall be no detectable set leakage at 1.1 times the rated pressure of the valve.
 - ii) Gas pressure test for seat and shell shall be carried out with nitrogen at 1000 psig. There shall be no detectable external leakage. Maximum allowable seat leakage shall be 0.1 atm-cc/min.

8.0 OTHER REQUIREMENTS

- 8.1 Manufacturer should confirm that valves are approved by Rail Road Commission of Texas, LP Gas Division under regulation for compressed natural gas or ANSI/ AGA NGV 3.1 1995, CAN/ CGA-12.3-M95 “Fuel Systems Components for Natural Gas Powered Vehicles” by “Canadian Standard Association”.

8.2 Spares and Accessories

- i) If required, manufacturer shall furnish a list of recommended spares and accessories for valves required during start up and commissioning.
- ii) If required, manufacturer shall furnish a list of recommended spares and accessories required for two years of manual operation and maintenance of valves.
- iii) Manufacturer shall quote for spares and accessories as per the material requisition.

9.0 TEST REPORTS & CERTIFICATES

- 9.1 The manufacturer shall supply material compliance certificates.
- 9.2 The valve manufacturer shall provide test procedure and valve inspection and test report for type tests carried out on similar valves as per the requirements of clause 7.0.

10.0 MARKING, PACKING & SHIPMENT

- 10.1 Heat code shall be marked on valve body to facilitate tractability.
- 10.2 All the items shall be suitably wrapped and packaged to with stand rough handling during ocean shipment and inland journey.
- 10.3 Each item shall be properly tagged and package separately to facilitate easy identification.



10.4 All items shall be wrapped and packaged in such-a-way that they can be preserved in original as new condition.

11.0 DOCUMENTATION

11.1 All documents shall be furnished in English language only.

11.2 At the time of bidding, bidder shall submit following documents :

- i) Reference list of previous supply for similar item, giving following details :
 - a) Name of the customer.
 - b) Specification of the item i.e., size and pressure & temperature rating.
 - c) Service
 - d) Quantity
 - e) Year of supply
- ii) Test procedure and typical certificates to be submitted as per clause 5.3, 5.4 and 9.4 (1) of this specification.
- iii) Copy of ISO:9000 certification for supplier/ manufacturer.
- iv) Manufacturer Quality Control Plan and sampling plan.
- v) Technical descriptive catalogue of manufacturer.
- vi) General arrangement/ assembly drawing of valve showing all features.
- vii) Sectional drawing showing major parts with reference number and material specification.

11.3 Prior to shipment, manufacturer shall submit following test certificates and documents.

- i) Test certificate of chemical, mechanical testing.
- ii) Manufacturers standard shop inspection test.
- iii) Manufacturers standard shop inspection and test reports.
- iv) The procedure and certificates to be submitted as per the requirements of clause 8.0 of this specification.
- v) Manual for installation, erection, maintenance and operating instructions including a list of recommended spares for valves.

12.0 GUARANTEE

12.1 Manufacturer shall guarantee that the design, materials, manufacturing and testing of fittings comply with the requirement of this specification and applicable codes and standards. Manufacturer shall replace all fittings which should result defective or fail during field pressure testing or fail to perform satisfactorily due to inadequate engineering, substandard material and workmanship.

12.2 The manufacturer shall guarantee against any defect, failure or malfunctioning occurring during 12 months from the date of commissioning or 24 months from the date of supply whichever is earlier.



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TECHNICAL SPECIFICATIONS-
Group.C- CONDUCTIVE CORE THERMOPLASTIC
HOSES



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General Specification for Conductive Core Natural Gas Hoses

All the items shall be suitable for compressed Natural Gas service and meet following specifications.

MATERIAL OF CONSTRUCTION

1. The hoses shall be made of Electrically Conductive Polymer Core tube.
2. 2 or more layers of fiber reinforcement.
3. Thick layer of abrasion resistant Polyurethane Black cover to prevent abrasion and display better wear resistance. Cover must be pin-pricked for use with CNG.
4. End Fittings shall be made of SS 316 material.

DESIGN & MANUFACTURE

1. High strength conductive polymer core tube is required to dissipate static electric build-up. Every CCNG hose is required to pass the below conductivity test before shipment from factory.
 - a. 3/8" hoses up to 180" inches: 0.52 mega-ohms
 - b. 3/8" hoses over 180" inches: 3.5 mega-ohms.
2. Working pressure of the hoses shall be 5000 psig (344 bar) @ 70 deg F (20 deg C). The minimum burst pressure shall be 20000 psig (1378 bar) @ 70 deg F (20 deg C).

OTHER REQUIREMENTS:

1. The supplier must be able to produce order copies of earlier supplies of the same component to CNG customers across India.

TEST REPORTS & CERTIFICATES

1. The manufacturer shall supply material compliance certificate.
2. The manufacturer must submit product type test reports for the following tests conducted on CCNG hoses:
 - a. Hydraulic Burst Pressure Test
 - b. Hydraulic Proof Pressure Test
 - c. Hydraulic Leakage Test
 - d. Change in Length Test

MARKING, PACKING & SHIPMENT

1. All hoses shall be duly marked with the manufacturers name, series, material, hose size and all relevant standards applicable.
2. All the items shall be suitably wrapped and packaged to withstand rough handling during ocean shipment and inland journey.
3. Each item shall be properly tagged and package separately to facilitate easy identification.
4. All items shall be wrapped and packaged in such a way that they can be preserved in original as new condition.

WARRANTY

1. Manufacturer & its authorized distributors should offer a comprehensive Warranty covering the performance of the product against any defects in material or workmanship for the life time of the product. A certificate to this effect must be issued on their respective Company letter head.



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**TECHNICAL SPECIFICATIONS-
Group. D- SS TUBES**



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1.0 GENERAL

Bhagyanagar Gas Limited (BGL), a joint venture of GAIL (India) Limited & Hindustan Petroleum Corporation Limited (HPCL) is executing Projects for City Gas Distribution in cities of Hyderabad, Telangana and Vijayawada & Kakinada, Andhra Pradesh

The present document covers the technical specifications for the procurement of "SS Tube"

This document shall be read in conjunction with schedule of rate (SOR), Material Requisition (MR), specification, standards, drawings and other documents forming a part of the tender document.

2.0 SCOPE OF SUPPLY

- 2.1 The scope of work not limited to manufacture, supply, Inspection & testing at work shop, marking, packing, handling and dispatch SS Tubes as per quantities given in MR and complying all the requirements as per ASTM 269.
- 2.2 All codes & Standards for manufacturing, testing, inspection etc. shall be of latest edition.
- 2.3 All tubes shall be designed as per applicable codes & standards.
- 2.4 All part/ component shall meet the requirement for the specified area's classification.
- 2.5 Area classification shall be Class-I, Division-I; Group-D as per NEC or Zone-I Group IIA/ IIB as per IS/IEC Specification or equivalent specifications.

3.0 CODES & STANDARDS

Applicable Codes and Standards to be followed are as under but not limited to the following:

ASTM A269: Seamless and Welded Austenitic Stainless steel tubing for general service

ASTM A450: General requirements for carbon, ferritic alloy and austenitic alloy steel tubes

In case of any conflict between this job specification and other document, the following order of precedence shall apply:

- Job Specification
- International Standards/ Codes Applicable.

4.0 OTHER TECHNICAL REQUIREMENTS

The Contractor shall carry out the work in accordance with Specifications, Standards and ASME B 31.3 - Process Piping / ASME B 31.8 - Gas Transmission and Distribution Piping System, Oil Industry Safety irectorate (OISD) norms.

Any discrepancy, ambiguity or conflict in or between any of the standards, specifications codes and the contract documents should he promptly referred to owner / Owner's Representative for his decision, which shall be binding on the bidder.



5.0 TECHNICAL SPECIFICATION

All the items shall be suitable for compressed natural gas service and meet following specifications.

5.1 Tube material shall be stainless steel as per ASTM A269(Grade TP 316).

5.2 Tubing material shall have minimum Molybdenum content 2.5%, Carbon content of max. 0.030%.

5.3 Tube shall be bright annealed.

5.4 Tube shall be seamless.

5.5 Tube hardness shall be less than Rb 80. Tubes shall be NACE MR 0175 certified for hardness, Hardness test shall be carried out on each tube.

5.6 Each tube shall be hydro tested as per requirement of ASTM A450 clause 22.3, at a hydro test pressure of 350 kg/cm²(g). However, it shall be ensured that the test pressure does not result in stresses exceeding the yield strength at test pressure.

5.7 The min. Strength & yield strength shall be verified by a means of tensile strength.

5.8 All S.S tubes shall be online 100% eddy current Tested as per ASTM A450.

5.9 Tolerance on outer diameter shall be ± 0.005 ".

5.10 Tube shall be of 6 meter in length with tolerance as per ASTM A269 (0mm, +3.2mm)

5.11 Minimum thickness shall be as per following table:

Tube OD	Minimum Wall Thickness
1"	0.120"
3/4"	0.095"
1/2"	0.083"

Note: Bidder to reconfirm maximum allowable working pressure for each tube size.

5.12 Following documents/ certificates to be submitted

- i) Chemical composition for heat
- ii) Chemical composition for products
- iii) Tensile test
- iv) Hardness test
- v) Flaring test
- vi) Eddy current test
- vi) Leak test
- vii) Visual inspection and dimensional check



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- 5.13 Tubing should be clearly marked with the specifications given in the inspection certificate with heat code, lot code, outer diameter and wall thickness with inspection certificate no.
- 5.14 Tubes should be supplied with both ends plugged with clean interior & each packing containing tubes shall carry the following stamped or written in indelible ink , manufacturer's name or trade mark, designation of tubes, lot no., etc.

6.0 INSPECTION AND TESTING

- 6.1 Inspection shall be carried out as per tender technical specification, relevant Codes/ Standards and inspection Plan /QAP/ QCT. Vendor to prepare detailed QAP. Vendor to prepare detailed QAP and submit the same for approval to Purchaser/ Purchaser's representative.
- 6.2 Bidder/vendor furnish all the material test certificates, proof of approval/ license from specified authority as per specified authority as per specified standard, if relevant, internal test/ inspection reports as per tender(technical specification and specified code for 100% material, at the time of final inspection of each supply lot of material.
- 6.3 For any control test or examination required under the supervision of TPIA/ Purchaser/ Purchaser's representative

7.0 PACKING & SHIPMENT

- 7.1 All the items shall be suitably wrapped and packaged to with stand rough handling during ocean shipment and inland journey. Tubes should be supplied with both end plugged
- 7.2 The item shall be properly tagged and package separately to facilitate easy identification. Items shall be wrapped and packaged in such-a-way that they can be preserved in original as new condition

8.0 DOCUMENTATION

Following test certificates shall be furnished along with shipment

- Test certificate of visual, chemical, mechanical testing (incl, tensile, hardness, flaring, Eddy current and leak test)
- Manufacturer's standard shop inspection & test report for all items
- The test report for specified tests
- Third party inspection report as applicable to meet the requirements of specified codes & standards as applicable.



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		QUALITY CONTROL TABLE SS TUBE						
S.NO	ACTIVITY DESCRIPTION / CHARACTERISTICS	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA / NORMS	FORMAT OF RECORD	Vend or	CA / TPIA	Remarks
1	RAW MATERIAL INSPECTION & BOUGHT OUT ITEMS							
1.1	Mother Pipes – Material MTC	100%	ASTM A312 TP 316	ASTM A312 TP 316	MTC of Manufacture / Internal Inspection Report	R	R	TPI to verify MTC of each batch
1.2	Identification of Mother pipes – Chemical Test & PMI test	Chemical Test one sample and PMI 100%	ASTM A312 TP 316	ASTM A312 TP 316	Internal Inspection Report	R	R	
2	IN – PROCESS INSPECTION							
2.1	Manufacturing of pipes	100%	ASTM A269 TP 316	ASTM A269 TP 316	Production Chart	P	R	
2.2	Heat Treatment @ 1040 deg. C to 1060 deg. C	100%	ASTM A269 TP 316	ASTM A269 TP 316	Heat Treat Chart	P	R	
2.3	Hydrostatic Test – Leak Test	100%	ASTM A269 TP 316	ASTM A269 TP 316	Original MTC and Report	P	R	
2.4	NDT (Eddy Current etc.)	100%	ASTM A269 TP 316	ASTM A269 TP 316	Inspection Report	P	R	
3	FINAL INSPECTION & TESTING							
3.1	Chemical Physical Test	One Sample per heat per lot	ASTM A269 TP 316	ASTM A269 TP 316	Lab Report	P	W	



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3.2	IGC PRACTICE "E" test (IGC : Inter Granular Corrosion)	One Sample per heat per lot	ASTM A269 TP 316	ASTM A269 TP 316	Lab Report	P	W	
3.3	Leak Test (Hydro test) or NDT (Eddy Current etc.)	10% of the offered lot	ASTM A269 TP 316	ASTM A269 TP 316	Inspection Report	P	W	
3.4	Visual and Dimensional	10% of the offered lot	ASTM A269 TP 316	ASTM A269 TP 316	Inspection Report	P	W	
S.NO	ACTIVITY DESCRIPTION / CHARACTERISTICS	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA / NORMS	FORMAT OF RECORD	Vendor	CA / TPIA	Remarks
4	MARKING & PACKING							
4.1	Marking (mfg. name, size, grade, spec, hear, not lot no., code no. etc) Clearing P/E or B/E (as per PO), plastics ends caps, packing etc.	10% of the offered lot	ASTM A269 TP 316	ASTM A269 TP 316	Inspection Report	P	W	
4.2	Review of lab reports MTC and preparing of IRN	-	ASTM A269 TP 316	ASTM A269 TP 316	Relevant test Report, MTC	P	W	
5	FINAL DOCUMENTATION			P.O / PTS	Compliance Certificate	P	R	

LEGENDS: R-Review, W-Witness, A-Approval, RW-Random Witness, H-Hold, P-Perform, TPIA-Third Party Inspection Agency, CA-Control Authority (Purchaser / purchaser's representative) , P.O.- Purchase order.



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Notes:-

- 1 The Above Testing and acceptance criteria are minimum requirements however, manufacture shall ensure that the product shall also comply to the additional requirements as per particular technical specifications (PTS)
- 2 The supplier shall submit their own detailed ITP prepared on the basis of above / technical specification for approval of purchaser / Purchaser's representative shall review/approve all the documents related to QAP/Quality manuals / drawings etc. submitted by bidder/supplier.
- 3 Bidder shall in coordination with supplier/sub vendor issue detailed production and inspection schedule indication the dates and the Locations to facilitate purchaser/ purchaser's representative and TPIA to organize inspection.
- 4 Special manufacturing procedures have to be specially approved or only previously approved procedures have to be used. In case of Conflict between specifications, more stringent condition shall be applicable.
- 5 Purchaser/purchaser's representative including TPIA will have the right to inspect any activity of manufacturing at any time.
- 6 All Reference codes/standards, documents, P.O copies shall be arranged by vendor / supplier for reference of TPIA/GGL at the time of inspection. At the time of delivery of material in stores, vendor will submit copy of all related document of inspection along with release with release note & MTC.



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SECTION – 11
SCHEDULE OF RATES (SOR)



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SCHEDULE OF RATES (SOR)

S/N	Items	Specifications	UOM	Qty	Unit amount, INR	Total amount, INR
I	Group-A – SS Ferrule / Fittings					
1	SS Union 3/4" OD X 3/4" OD	Tube OD 3/4" x Tube OD 3/4", Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	165		
2	SS Union 1/2" OD X 1/2" OD	Tube OD 1/2" x Tube OD 1/2", Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	45		
3	SS Union Tee 3/4" OD X 3/4" OD X 3/4" OD	Tube OD 3/4" X 3/4" OD X 3/4" OD, Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	72		
4	SS Union Tee 1/2" OD X 1/2" OD X 1/2" OD	Tube OD 1/2" X 1/2" OD X 1/2" OD, Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	11		
5	SS Reducing Union 1" OD X 3/4" OD	Tube OD 1" x Tube OD 3/4", Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	92		
6	SS Nut 1" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	5		
7	SS Front Ferrule 1" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	30		
8	SS Back Ferrule 1" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	30		
9	SS Nut 3/4" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	345		
10	SS Front Ferrule 3/4" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	280		
11	SS Back Ferrule 3/4" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	280		
12	SS Nut 1/2" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	65		
13	SS Ferrule set 1/2" OD containing Front & back Ferrule	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	80		
14	SS Connector for 3/8"OD tubes to 1/4" NPT(M) connection on other end	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	4		
15	SS Connector for 3/8"OD tubes to 1/2" NPT(M) connection on other end	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	4		

Seal & Sign Of Bidder



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16	SS UNION CROSS 3/4" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	12		
17	SS UNION CROSS 1/2" OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	13		
18	SS CHECK VALVE 3/4" OD ENDS	Cracking Pressure: 1 psi, Hydrostatic test according to NC-23; Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	46		
19	SS QUICK CONNECTOR BODY, 1/2" NPT(F)	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	47		
20	SS QUICK CONNECTOR STEM, 1/2" TUBE OD	Material : SS316 (Rated pressure : 5000 PSI @ 70°F Temperature : 0°F to 400°F)	Nos	20		

Sub Total in INR

Excise Duty@.....%

Sales Tax with C Form@%

Freight Charges including transit Insurance , INR

Grand Total inclusive of all applicable taxes and duties in INR

S/N	Items	Specifications	UOM	Total	Unit amount, INR	Total amount, INR
Group-B : Ball Valves						
II						
1	2 WAY BALL VALVE, SS, 3/4" OD-TRUNION	Material : SS316 (Rated pressure : 344 BAR Temperature : -40 to 121 DEG C), PEEK SEATS; Hydrostatic tested	Nos	202		
2	2 WAY BALL VALVE, SS, 1/2" OD-TRUNION	Material : SS316 (Rated pressure : 344 BAR Temperature : -40 to 121 DEG C), PEEK SEATS; Hydrostatic tested	Nos	54		
3	3 WAY BALL VALVE, SS, 1/2" OD X 1/2" OD X 1/4" FNPT	Material : SS316 (Rated pressure : 344 BAR Temperature : -40 to 121 DEG C), PEEK SEATS; Hydrostatic tested	Nos	70		

Sub Total in INR

Excise Duty@.....%

Sales Tax with C Form@%

Freight Charges including transit Insurance , INR

Grand Total inclusive of all applicable taxes and duties , INR



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S/N	Items	Specifications	UOM	Total	Unit amount, INR	Total amount, INR
Group-C : Conductive Hose						
III						
1	SS NG SERIES CONDUCTIVE CORE HOSE-3/8" OD	SS NG SERIES CONDUCTIVE CORE HOSE-3/8" OD; 60" OVERALL LENGTH WITH HYDROSTAIC TEST	Nos	55		
Sub Total in INR						
Excise Duty@.....%						
Sales Tax with C Form@						
Freight Charges including transit Insurance , INR						
Grand Total inclusive of all applicable taxes and duties, INR.						

S/N	Items	Specifications	UOM	Total	Unit amount, INR	Total amount, INR
Group-D – SS Tubes						
IV						
1	1/2"OD X 0.083" WT,SS316	ASTM A 269 TP316,TOLERANCE(+0.005"),FINISH-FULLY ANNEALED SEAMLESS,HARDNESS-Rb<80	MTR	470		
2	3/4"OD X 0.095" WT,SS316	ASTM A 269 TP316,TOLERANCE(+0.005"),FINISH-FULLY ANNEALED SEAMLESS,HARDNESS-Rb<80	MTR	3310		
3	1"OD X 0.120" WT,SS316	ASTM A 269 TP316,TOLERANCE(+0.005"),FINISH-FULLY ANNEALED SEAMLESS,HARDNESS-Rb<80	MTR	610		
Sub Total in INR						
Excise Duty@.....%						
Sales Tax with C Form@						
Freight Charges including transit Insurance , INR						
Grand Total inclusive of all applicable taxes and duties, INR.						