Date : 20/6/2023
To : Registered Vendors
Number of Pages: Part 1 Invitation (10 pages)
&Part 2 Technical documents (55 pages)

Invitation for Limited Tender # 7241 FOR GAS PIPELINE PROJECT For Supplying Ball Valves

Introduction:

GASCO as a well known pioneer company in the field of gas processing, transmission & distribution had been established as a subsidiary of the Egyptian Gas Holding Co. (EGAS) whom is responsible to handle natural gas industry companies affairs in the Egyptian Ministry of Petroleum, **GASCO's** mission focuses on the management, operation, maintenance, upgrading, development & modernization of the National Gas Grid as well as gas processing and recovery of components that could be used in domestic & industrial applications.

Though, GASCO is initiating a new projects gas pipeline project in terms of expanding energy efficiency investment in the Egyptian gas pipelines infrastructure

In this regard, GASCO invites **Ball Valves** Manufacturers & Trade Houses – **whom are already received the Publication Fax** – to show their co-operation in fulfilling Gasco requirements by participating and submitting their optimized quotations ***based on optimized delivery schedule and prices***, noting that the due date for submitting the technical offer envelope should be on **1/8/2023.**

Meanwhile, if you are not interested in submitting an offer in this tender, please take the necessary action to submit your decline for this tender only to the following emails:
sherin_nafe@gasco.com.eg ; ahmed_abdelaziz@gasco.com.eg ;
karem_nayef@gasco.com.eg ; mohammad_shahin @gasco.com.eg ;
Amr_faramawy@gasco.com.eg **, noting that non submission of the decline will negatively affect your position in Gasco's vendors list as well as your opportunity to be selected and invited in the upcoming tenders.**

Please visit www.gasco.com.eg to review & download the following:

Part A: Invitation for participating in this tender.
Part B: Technical Documents including the following:

1. **Technical Evaluation Documents**
2. **Approved Manufacturer Short Vendor List**
3. **Annex-A Bidder Information Form**
4. **Annex-B Clarifications/Deviations Sheet**
5. **Annex-C Material Requisitions**
6. **Annex-D Material Specifications**
7. **Annex-E Table of Confirmation**

* Important Notes *

1. Any technical offer submitted without the arrangement stated in the technical tender document will be totally disqualified with no further clarification.
2. Any technical papers submitted loose and not included inside the technical Binder file will be totally disregarded.
3. A copy of technical offer can be submitted on Flash Memory with the same arrangement.
4. The bidder must mention the main offer and only one alternative offer (if any), in case of more than one alternative offer, the main offer only will be considered.
5. Annex-A, Bidder Information Form (Native file is available as Microsoft word format) shall be digitally filled with verified technical contact emails, moreover any hand written form shall be disregarded. Any unclear, missing information is the bidder own responsibility.
6. Annex-B, Technical Clarification Sheet (Native file is available as Microsoft word format) shall be digitally filled, signed and stamped by manufacturer, moreover any hand written form or not signed and stamped by manufacturer shall be disregarded.
7. Table of confirmation (Native file is available as PDF format) shall be digitally filled with proper technical, moreover any hand written form will disqualify the whole technical offer.

Instructions To Bidders

1-Introduction:

To facilitate bidding and bid evaluation, the hereinafter instructions are to be followed in preparing your proposal.

2-Acknowledgment:

Tender acknowledgment must be submitted within **Max. 3 days** from receiving publication fax, in which this acknowledgment must confirm your receipt of publication & your intention to quote within the launched deadline **or** either an official declination for not being able to quote.

3-Tender Documents:

A set of Tender documents are provided herein and will form the basis of any subsequent awarding form (Order/Contract):

- Invitation for tender "Publication Fax".
- Instructions to bidders.
- General terms & Conditions of purchase.
- Technical Documents including 7 parts

4-Bid Closing Date:

- Bid closing date will be on **1st of August, 2023 12 O'clock noon Cairo Local Time (any bid received beyond the specified deadline will not be considered).**

Your Quotation should be submitted in a form of **one** sealed envelope (technical envelope only) including **hard and soft copies from the bid**.

The above envelope must bear Tender title and to indicate the words "Sealed Bid Don't Open", and to be submitted to the Purchaser at the following address:
GASCO'S Head Office
The Ring Road, El Teseen St., Fifth Settlement
New Cairo, Egypt
Fax no. (202) 2538 4651
Attention: Chairman Assistant For Materials & Inventory Control: Eng. Alaa Hassan

Important Note:
GASCO will only notify technically accepted Bidders to submit their commercial bids & bid bonds in a specific date prior to commercial opening as any commercial bids presented without GASCO'S official request will not be considered.

5-Prices:

5.1 All prices should be submitted itemized (per line item) on **CFR Liner Out Alex Seaport** INCOTERMS 2020"**, it is to be noted that lump sum value for the freight charges will not be accepted.**
5.2 Prices to be submitted in the currency of US Dollars/Euro based on the above stated incoterms.

6-Quotation Validity:

- Quotation should be valid for a period **of 90 days at least** from bid closing date.

7-Delivery Period:

- It is to be strictly noted that the quoted delivery period must be counted from **the purchase order receipt date**, although the payment will be affected through Letter of Credit.
- Specific delivery schedule will be determined after the technical evaluation phase termination and upon the invitation for commercial bids.

8-Bid Identification:

Presented bids should be clearly identified stating the tender number, deadline date and identification flag assigning the contents of each envelope as well as the Bidder name which should be indicated clearly on the envelope.

9-Shipping Details:

9.1. Vessels age should not exceed than 15 years as any extra insurance fees will occur due to shipping materials on vessel age exceed 15 years will be beard by your side **and in all cases shipping on vessel age exceed 30 years is not accepted.**

9.2. All shipping details for each consignment as well as number of consignments to be indicated clearly in your commercial envelope i.e. (net weight, gross weight, volume, no. of packages, shipping port, and packing type).

9.3 Trans-Shipment is not allowed.

9.4 Partial Shipment is allowed.

9.5. In case of shipment inside full load container (FCL), the bill of lading should include 21 days free of demurrage starting from receiving date at port of destination.

9.6. Due to the latest instructions received from Egyptian Environmental Authorities & in case of shipping inside wooden boxes / pallets, Bidders should arrange for wooden cases fumigation process at port of loading which should be stamped as fumigated Otherwise, this wooden cases will be returned back to be fumigated at port of loading on Bidder's account.

10- Order Splitting:

GASCO reserves the right to split tender among technically accepted bidders based on the lowest quoted prices.

11- Evaluation Criteria:

A) Technical:

The proposed Bids will be evaluated as technically qualified or not, based on compliance with tender documents specifications and conditions.

B) Commercial:

To be carried out only for technically accepted bidders, based on the following criteria:

- Prices on CFR Liner Out **Alex Seaport**.
- Compliance with the identified delivery schedule in which evaluation criteria will be clearly identified upon the invitation for commercial bids
- Evaluation Exchange rate will be according to the Central Bank of Egypt (Sell / Exchange Rates) in commercial bids closing date.
- Compliance with Commercial terms & conditions stipulated herein.

- In case of any item price or freight charge which was not quoted by the bidder, highest offered price in the tender for this item/freight charge will be considered for evaluation purposes only.

12- Cancellation of Tender:

If the project is cancelled, significantly modified or postponed during bidding evaluation process, **Gasco** reserves the right to cancel the tender without bidders being entitled to any compensations.

13- Language:

-All quotations and any subsequent correspondences shall be in English language.
-It should be noted that in the event of any Purchase Order resulting from this "Invitation for Tender", all documents such as (Drawings, Data Sheets, Manufacturing Procedures, and Test Mill Certificates) shall also be in English language.

14- Acceptance of Instructions:

The submission of a quotation will be considered as a total acceptance by Bidders to these instructions without exceptions, unless the exceptions are clearly stated and quantified.

15- General Instructions:

1. Any Bid received by fax or after the mentioned due date will be considered unacceptable.
2. In case of discrepancy between unit price and total price, the unit price shall prevail.
3. Failure to comply with GASCO Terms & Conditions may result in considering the presented bid unacceptable.
4. Any deviations or exceptions to GASCO Terms & Conditions should be mentioned & highlighted in bold, otherwise it will be implied that all terms & conditions are accepted.
5. The bid shall include all the contact information of the manufacturer / trade house "fax number, telephone number, email address and cellular number" should there be any question of a technical nature that require immediate clarification.
6. The term "to be agreed" for terms of payment and/or quoted delivery is not acceptable.
7. Bids should include Country of Origin & Beneficiary Name, Address as well as complete Banking details.

General Conditions.

1 – Definitions:

In case of Contract/Order, the following terms shall be interpreted as indicated:
(a) The Contract/Order means the agreement entered into between the Purchaser and the Supplier, as recorded in the Contract/Order Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference herein.
(b) The Contract/Order Price means the price payable to the Supplier under the Contract/Order for the full and proper performance of the related contractual obligations.

(c) The Goods means all of the equipment, machinery, and/or other materials which the Supplier is obligated to supply to the Purchaser under the Contract/Order.
(d) Services means site services such as: installation, commissioning & testing, startup, provision of technical assistance, training and all other such obligations of the Supplier which are covered under the Contract/Order
(e) The Purchaser means: The Egyptian Natural Gas Company (Gasco).
(f) The Supplier means the person, firm or company with whom the Contract/Order is placed.

2- Payment:

- Payment will be through **100% Letter of Credit (L/C) in the presence of 10% unconditional performance guarantee against presentation of the following documents:**

1) 3 originals of Commercial Invoice showing country of origin (only one original to be stamped from chamber of commerce)
2) 1 original of Certificate of Origin (to be stamped from chamber of commerce)
3) 3 originals of Itemized Packing List
4) 1 original of Euro 1 Certificate (for European community origin items only).
5) 1 copy of Release for shipment note: endorsed from **GASCO** before shipping upon reviewing & approving original Mill Test Certificate "MTC"/ Certificate of conformity.
6) 3 originals of Bill of lading showing freight prepaid (should include 21 days free of demurrage for full container load starting from receiving date at port of destination).
N.B - One set of shipping documents including 1 Original Of { B/L , Commercial Invoice, Euro 1 certificate, certificate of origin & Packing List} must be sent to Gasco directly by courier within 5 working days from B/L date, as any demurrages fees may occurred due to the delay of submitting these documents will be beard by the supplier. All other originals and copies shall be sent to a Gasco's bank within 10 days from B/L date.

3 – Delay Penalty & Liquidated Damages:

-If the Supplier fails to deliver any or all of the Goods by the Date(s) of delivery within the period(s) specified in the Purchase Order, the Purchaser may without prejudice to all other remedies under the Purchase Order, deduct from the Purchase Order Price, as liquidated damages, a sum equivalent to the percentage specified below of the delivered price of the delayed Goods for each week or part thereof of delay until actual delivery, up to a maximum deduction of the percentage specified below.

- The liquidated damage shall be 1% per full week or part thereof of delay calculated on the delayed shipment only.
- The maximum amount of liquidated damage shall be 5%.

-After which, the purchaser will specify a predetermined amount of money that must be paid by the supplier as damages for failure to perform under a contract. The amount of the liquidated damages

will be determined at the time of "Invitation for Commercial Bids" of the damages that would be caused by a breach.

-Once the maximum amount is reached, the purchaser may at his own decision terminate the contract/order and forfeit the performance guarantee without prior notification to the supplier. In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods similar to those undelivered or not performed, and the Supplier shall be liable to the Purchaser for any additional costs for such similar Goods. However, the Supplier shall continue performance of the Contract to the extent not terminated.

4 – Banking Charges:

In case of order/contract all bank charges outside Egypt will be on supplier's account that is including L/C confirmation charges.

5–Performance Guarantee:

In case of order, Supplier will be obliged to submit a final letter of guarantee in the form of unconditional banking guarantee amounting to **10%** from the total order value issued by first class bank at Egypt and incase of Issuance of performance Bond from foreign bank should be confirmed from first class Egyptian Bank valid for either 12 months from materials commissioning or 18 months from last shipment date, whichever comes earlier.

6- Variation Order:

In case of order/contract **GASCO** will reserve the right to increase/decrease order quantity within **25%** from the purchased quantities with no changes in unit price within order execution period.

7 – Expediting:

The goods supplied under the order/contract, shall be subject to Expediting Process/ Inspection by the purchaser either by himself or by assigning a third party expeditor / inspector to confirm the compliance of the supplied materials to the technical specifications and that the manufacturing schedule is proceeding without any deviations. Purchaser's representatives shall be afforded free access during working hours to supplier's and sub-supplier's plants/mills for Expediting/Inspection purposes. As required by purchaser, supplier shall provide schedules, progress reports and un-priced copies of supplier's purchase orders/contracts to his sub-suppliers for purchaser's use in expediting process. Supplier shall notify purchaser in writing of any action or anticipated delays immediately upon discovery. Such notice shall include an estimated period of delay, causes, and corrective actions being taken.

8- Arbitration:

-If at any time there shall be any dispute or failure to agree between the parties in connection with the order/contract or breach thereof, this shall first be referred to the parties for an amicable settlement and in the event that such referral fails, it shall be referred to arbitration under the Rules of the Regional Center of International Commercial Arbitration in Cairo, A.R.E. according to the conciliation and arbitration of the Egyptian law no# 27 for the year 1994

-The arbitration shall be held in Cairo, A.R.E. The award of the arbitration shall be final and binding to all parties. The arbitration shall be conducted in English and/or Arabic Language.

9- Warranties:

9.1. The supplier shall guarantee and warrant that all the supplied materials shall be in strict conformity with the agreed upon technical specifications and free from workmanship defects and faulty design, for a period of either twelve (12) months from the relevant date of materials commissioning **or** 18 months from the last date of shipment, whichever comes earlier.

9.2. The supplier shall be responsible for replacing and delivering on CFR/CPT basis any defected materials during the warranty / guarantee period upon the purchaser's notification.

9.3. The warranty / guarantee period for the replaced materials, shall have a new guarantee period of twelve (12) months from the date of putting it into operation.

10- Force Majeure:

10.1. Neither party shall be deemed to be in default of its contractual obligations whilst performance thereof is prevented by Force Majeure and the time limits laid down in the Contract / order for the performance of such obligations shall accordingly be extended by a period equal to that during which a Force Majeure event is operated.

10.2. Force Majeure are events caused by neither of the parties which are unforeseeable at the time of signature of the Contract, uncontrollable and which render the further performance of the contractual obligations impracticable as for instance acts of God, acts of war, acts of government, blockage, revolution and the like provided that any such event is beyond the control of any of the parties invoking the Force Majeure events. On the occurrence and cessation of any of such contingencies the party suffering there from shall immediately give the other party notice in writing of the cause of delay and its cessation respectively. Such notice shall be confirmed by official evidence.

According to new custom procedures(ACID) ,The supplier must provide us with the attached table.

ACID REQUEST FORM

pre #			***ACID #***		
1-	***Importer***				
	Company Name	:			
	Arrival port	:			
2-	***Exporter Information***				
	Name	:			
	Registration Number	:			
	Or Vat #				
	Exporter Country	:			
	Foreign exporter type ***Trade mark Owner** ***Branch** ***Agent** ***Distributer** ***Manufacturer** ***other**	:			
	Contact Information				
	Name	:			
	ID	:			
	Phone #	:			
	Email:	:			
3-	***Shipment Intial Information***				
1 MUST	**P O #**	:		Date	:

	Invoice #					
	Invoice # 1 / Type (Final / inatial)	:		Date	:	
	Total / Cur	:				
	Total Package	:		W. Net		
	Invoice # 2 / Type	:		Date	:	
	Total / Cur	:				
	Total Package	:		W. Net		
	Invoice # 3 / Type	:		Date	:	
	Total / Cur	:				
	Total Package	:		W. Net		
	Port Of Loading	:				
	Port Of Discharging	:				

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Ball Valve
Technical Tender Document
For
GAS PIPELINE PROJECT

JUNE-2023

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INDEX

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Ball Valves Technical Evaluation Documents:

The following documents, must be introduced in BINDER FILE arranged in the following sequence with physical separators:

1. **Bidder Technical offer.**
2. **Bidder Information Form (See Annex-A).**
3. **Clarifications/Deviations/Comments Sheet (See Annex-B).**
4. **GASCO MRQ with Bidder & Manufacturer Stamp for each paper (See Annex-C).**
5. **GASCO Specification with Bidder & Manufacturer stamp for each paper (See Annex-D).**
6. **GASCO Table of Confirmation (See Annex-E), Bidder must submit table of confirmation completely filled and signed/stamped from Bidder & Manufacturer**
7. **Manufacturer Authorization letter.**
8. **Valid API 6D certificate & Fire Test Certificate.**
9. **Confirmation of accreditation to ISO 9001, 14001 & 18001.**
10. **Preliminary Drawings for each item (for information only).**
11. **Raw material supplier list including country of origin.**
12. **Reference lists for last 5 years for fully welded construction ball valves showing Client/Owner, Year of Supply, Diameters, Material Grade and value of order.**
13. **Evidence for experience of production fully welded construction ball valves in the last 3 years (relevant P.O's to be submitted) as the followings:**
    13.1. at least 50 Valves of 42"
14. **Plant Capabilities (including production ranges for diameters, pressure rating and Annual Production Capacity).**
15. **Preliminary Inspection Test Plan (ITP).**
16. **Manufacturer Quality Plan.**
17. **Manufacturing procedures specifications.**
18. **Orders in Hand.**
19. **Evidence for Worldwide Approvals.**
20. **Manufacturer Catalogs.**

Gas Over Oil Actuators Technical Evaluation Documents:

The following documents, must be introduced in BINDER FILE arranged in the following sequence with physical separators:

1- A cover page contains the submitted model(s) (Main and one optional alternative offer only) for the gas over oil actuators.

2- Main & One only Alternative (If any) GAS Over Oil Actuator Offer:

- **Bidder Main Actuator Technical offer.**
- **Clarifications/Deviations/Comments stamped Sheet.**
- **GASCO Actuators Table of Confirmation, Bidder must submit table of confirmation completely filled and signed/stamped from Bidder & Manufacturer.**
- **Actuator initial wiring diagram and Schematic diagram.**
- **Reference lists for last 5 years for the actuator showing Client/Owner, Year of Supply.**
- **Preliminary Inspection Test Plan (ITP).**
- **Manufacturer Quality Plan.**
- **Manufacturing procedures specifications.**
- **Orders in Hand.**
- **Evidence for Worldwide Approvals.**
- **Manufacturer Catalogs and manuals**

NOTES:

a. **Any technical offer submitted without the above arrangement will be totally disqualified with no further clarification.**
b. **Any papers submitted loose and not included inside the Binder file will be totally disregarded.**
c. **A copy can be submitted on CD or Flash Memory with the same arrangement.**
d. **The bidder must mention the main offer only for ball valves, any alternative offer (if any) will be totally disregarded.**

   For Ball Valves equipped with Gas Over Oil Actuators, Bidder shall offer main and one only alternative (if any) GOV technical offer.
e. **Annex-A, Bidder Information Form (Native file is available as Microsoft word format) shall be digitally filled with verified technical contact emails, moreover any hand written form shall be disregarded. Any unclear, missing information is the bidder own responsibility.**
f. **Annex-B, Technical Clarification Sheet (Native file is available as Microsoft word format) shall be digitally filled, signed and stamped by manufacturer, moreover any hand written form or not signed and stamped by manufacturer shall be disregarded.**
g. **Table of confirmation (Native file is available as PDF format) shall be digitally filled with proper technical, moreover any hand written form will disqualify the whole technical offer.**

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Ball Valve Approved Manufacturers Short Vendor List

Any offer outside this list with be automatically disqualified with no further clarification

1. **Cooper Cameron & Grove Facility (Italy)**
2. **Perar (Italy)**
3. **Emerson Automation Solution**
4. **Schuck Armatureun (Germany)**
5. **Pietro Fiorentini (Italy)**
6. **RMA (Germany)**
7. **Breda (Italy)**
8. **Pibiviesse (Italy)**
9. **LCM (Italy)**
10. **Valbart (Italy)**
11. **Viar (Italy)**
12. **Enimex (Greece)**
13. **Valvitalia (Italy)**
14. **Ringo Valves (Spain)**
15. **LVF Valves (Italy)**
16. **HIT Valves (Italy)**
17. **Bohmer (Germany)**
18. **Neway (China)**
19. **Vector (Spain)**
20. **Italbest Valves (Italy)**
21. **GWC (Italy)**
22. **FG Valvole (Italy)**
23. **Dafram (Italy)**
24. **Zavero (Italy)**
25. **DHV Industries (USA)**
26. **SWI Valves (S.Korea)**
27. **Camtech (UAE)**
28. **TIV (Italy)**
29. **Gemels SRL (Italy)**
30. **Italvalv S.R.L (Italy)**
31. **Arflu (Spain)**
32. **Control Seal (Netherlands)**
33. **Vastas (Turkey)**
34. **Chengdu Chenggao CHV (China)**
35. **FANGZHENG FZV (China)**
36. **KCL (S. Korea)**
37. **Oswal (India)**
38. **Valpres s.r.l (Italy)**
39. **MSA (Czech)**
40. **Armatury (Czech)**
41. **Lishoi Ouyi Valve (China)**
42. **KVC (Japan)**
43. **Erreesse (Italy)**
44. **Valveometal**

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Gas Over Oil Actuator Approved Manufacturers Short Vendor List

1. CAMERON LADEEN (Italy)
2. BIFFI (Italy)
3. ROTORK (Italy)
4. SCHUCK (Germany)
5. VALVITALIA (Italy)
6. PROCONTROL (Italy)
7. VASTAS (Turkey)

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Annex-A

Bidder Information Form

Annex-A, Bidder Information Form (Native file is available as Microsoft word format) shall be digitally filled with verified technical contact emails, moreover any hand written form shall be disregarded. Any unclear, missing information is the bidder own responsibility.

Bidder Information Form

[The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]

Date: *[insert date (as day, month and year) of Bid Submission*]
GASCO Tender No.: *[insert number of bidding process]*
BIDDER Tender No.: *[insert number of bidding process]*

Bidder's information Data: *[insert Bidder's legal name]* Legal Name: *[insert Bidder's name]* Country of origin: *[insert Bidder's origin]* Address: *[insert Bidder's Address]* Web site: *[insert Bidder's numbers]* Email Address: *[insert Bidder's email address]* Tel. no.: Fax no.:
2. Bidder's Authorized Representative Information Name: *[insert Authorized Representative's name]* Address: *[insert Authorized Representative's Address]* Telephone: *[insert Authorized Representative's telephone numbers]* Fax numbers: *[insert Authorized Representative's fax numbers]* Email Address: *[insert Authorized Representative's email address]*
3. Manufacturer's information Legal Name: *[insert manufacturer name]* Country of origin: *[insert manufacturer origin]* Address: *[insert manufacturer Address]* Web site: *[insert manufacturer numbers]* Email Address: *[insert manufacturer email address]*

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Annex-B

Clarifications/Deviations Sheet

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Clarifications/Deviations Sheet	Bidder Ref. no.	GASCO PRJ. no.	MRQ. no.	SPECS. no.	C/D Rev.	Date	Page no.
						/ /	of

Sr. no.	Specs. Item no.	GASCO Requirements	Bidder Clarifications/Deviations	GASCO Reply	Remarks

Annex-B, Technical Clarification Sheet (Native file is available as Microsoft word format) shall be digitally filled, signed and stamped by manufacturer, moreover any hand written form or not signed and stamped by manufacturer shall be disregarded.

Bidder Sign. & Stamp:	**GASCO Sign. & Stamp:**

1- Bidder shall complete GASCO clarifications/deviations sheet incorporating all deviations and submit along with the tender. All deviations shall be supported with proper reasoning for GASCO review / approval.
2- In case of no deviations on GASCO specification and Material Requisition, the Vendor shall write “No Deviation” on the clarifications/deviations sheet and shall be duly stamped, signed and submitted along with the tender documents.
3- Without the submission of properly completed “Clarifications/Deviations sheet” along with the offer, the Bidder's offer shall be considered as incomplete offer and to be subjected to rejection at the sole discretion GASCO.
4- Deviations listed elsewhere in the proposal (i.e., other than the Deviation sheet) considered as invalid and shall be disregarded.
5- No deviations to the specified requisition/specification shall be considered after order placement.

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Annex-C

Material Requisitions

[See Attached]

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Annex-D

Material Specifications

GENERAL SPECIFICATION

FOR

FORGED STEEL BALL VALVES

General Specification for Forged Steel Ball Valves			
Specs. No. GASCO / MS / 009 Rev. 12			
Issue:	**April 2023**	**No. of Sheets:**	**23**

CONTENTS

Attachment:

SPECIFICATION OF FORGED STEEL BALL VALVES

1. SCOPE

1.1 All valves shall comply with the requirements of ASME B 31.8, Latest Edition, Gas Transmission and Distribution Piping Systems.

1.2 All valves shall be full bore and permit the safe passage of all pipeline pigs.

1.3 Valves shall be made in accordance with API 6D Specification for Pipeline Valves, **Latest Edition**, and with the requirements of this Specification.

2. GENERAL SERVICE CONDITIONS

2.1	Fluid Medium	:	natural gas
2.2	Ambient temperature	:	-5 °C to + 50 °C
2.3	Operating Temperature	:	Minimum - 5 °C Maximum + 70 °C
2.4	Pipeline operating pressure	:	Minimum 25 bar Maximum 75 bar
2.5	Pipeline Design pressure	:	82.5 bar

2.6 Valves may be installed:

2.6.1 Above ground unsheltered

2.6.2 Below ground with or without extensions as required.

2.7 Valve stem may be positioned.

2.7.1 Vertically

2.7.2 Horizontally

3. MATERIALS

3.1 Material for body shall be forged steel or rolled plates according to API 6D. Cast body is not accepted.

3.2 Material selected for the ball is forged steel with nickel plating. Minimum thickness of nickel plating to be 0.02 mm, and minimum specified hardness of coating to be 500HV. Cast ball is not accepted.

3.3 Material selected to valve stem shall be forged steel with electro nickel plating or stainless steel material.

3.4 Material selected for welding end shall have a guaranteed minimum yield strength suitable for direct attachment to pipe according to API 5L as per table of requirements. Any differences in the Specified Minimum Yield Strength "SMYS", for both weld ends and pipes, shall be taken into account when calculating wall thicknesses at weld ends. In addition, the inner diameter of the weld ends of the ball valve and the pipe shall be the same.

3.5 Material selected for valve welding ends and pup pieces (if exist) shall have a maximum carbon equivalent of 0.42 % determined by the formula.

$$CE = C + \frac{Mn}{6} + \frac{cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$

3.6 Charpy impact testing

Where welding is carried out on pressure containing parts of valves at thickness greater than 25mm, post weld stress relief must be carried out.

Charpy impact testing is required on the material of the pressure containing parts, including welding ends, according to ASTM 370.

Charpy specimens shall be taken in the direction of principal grain flow, and notched perpendicular to the original surface of the plate or forging. Tests shall be carried out at $-10^{o}C$. The method of testing shall be in accordance with BS 131 : Part2. Acceptance standards are given in table 1.

Table 1 - Acceptance standards for valve end material

Specified tensile strength for valve end material	**Average of three full size specimens (minimum) (J)**	**Individual full size specimens (minimum) (J)**
Less than 450 N/mm^2	27	20
450 N/mm^2 and above	40	30

4. DESIGN AND CONSTRUCTION

4.1 The design and construction of valves shall comply with the requirements of API standard 6D, latest edition, ASME B 31.8 & ASME B 16.25. For one piece body valves.

4.2 Welding ends shall be beveled for welding to pipe or fittings in accordance with ASME B 31.8.

4.3 Due consideration of difference in Specified Minimum Yield Strength "SMYS" (for both valve ends and pipes) shall be taken when calculating wall thickness at welding ends.

4.4 The ball shall be solid ball, one piece without welds.

4.5 For sizes up to and including 24". Valve flange dimensions shall be in accordance with ANSI B16.5 latest edition. For sizes 22" and above 24" valve flange dimensions shall be in accordance with MSS SP44.

4.6 If required, pups shall be manufactured according to API 5L with the same wall thickness as specified in table of requirements. The minimum pup lengths will be equal to (one D up to 75cm) for all diameters ≥ 8" and 20 cm for smaller diameters.

4.7 The length of the valve with pup shall be equal to the length of valve according to API 6D (short pattern is not accepted) plus to the length of the 2 pups as per 4.6.

4.7.1 For ball valve greater than 36", API 6D and ASME B16.10 don't cover the valve face to face dimensions, so the minimum acceptable length of that dimension is 2083mm.

4.8 **All valves shall have the following:**

4.8.1 The valve body shall be provided with ribs or feet to support the valve in the vertical position.

4.8.2 The valve shall be trunnion mounted.

4.8.3 Stem protectors and indicator rods shall be provided when so specified.

4.8.4 The valve should be one piece body full bore or reduced bore as per table of requirements. A bolted body is not accepted.

4.8.5 The ball shall be solid and one piece without any weld.

4.8.5 a The valves must be double piston effect seat design

4.8.6 The ball valve should be double block and bleed. A trunnion seal arrangement shall be provided with a double block with vent/drain facility. The body of the valve shall have adequate full bore body vent and drain valves to fully vent/drain the cavity of the ball. The body vent and drain valves shall be of a low maintenance type supplied complete with plugs. These connections must offer a gas tight seal and must conform to ANSI B18.1 Standard for thread type drain/vent connections.

Ball Valve Sizes	**Drain/Vent Connections**
6" to 14"	1/2"
16" to 22"	3/4"
24" to 34"	1"
36" to 48"	1.5"

4.8.7 Sealant injection points on ball valves shall be provided. These injection points shall incorporate non-return valves in the valve body followed by an isolating valve and a giant button head nipple of ample capacity for injecting sealant. Injection points for the stem seal shall also be provided.

4.8.8 The valves shall be fire safe according to British Standard and API Standards. These Standards to include API 6FA, API 607, as per clause A6 in API 6D, and BS 6755 Part 2. Where standards conflict, the worse case shall be adopted and confirmed by return tender document. This must include a fire safe graphite stem seal.

4.8.9 Three hand guns with quantity (60) sealant sticks are required with the order at no extra cost for the quantity.

4.8.10 All welding shall be in accordance with the requirement of ASME Boiler and Pressure Vessel Code, latest edition, Sections VIII and IX.

4.8.11 The stem seal shall be replaceable while the line is in operation in open or closed position.

4.8.12 Gear operated valves shall have worm gear type with the hand wheel on the side. The gear housing must be water tight. All moving parts should be grease filled.

The diameter of the hand wheel or the length of the operating lever shall be such that the total force required to operate the valve throughout its full operating range shall not exceed 350N. The direction of operation (clockwise to close) of the hand wheel or lever shall be clearly marked. When the hand wheel or lever itself carries this marking it shall be non-reversible on the valve stem. Means shall also be provided on the gear box, where supplied, to show the position of the valve throughout its travel.

All gear box cases shall be provided with a relief valve to prevent over-pressurization in the event of gland leakage, unless the design of the valve is such that it is not possible to occur. Blow out plugs shall not be permitted.

4.8.13 All valves shall be fitted with suitable stops at the fully closed and fully open positions and shall be so designed as to prevent disorientation. The design shall prevent the ingress of foreign material and corrosion products that could impair the operation of the stops.

4.8.14 A device capable of locking the valve in the fully open or fully closed position shall be provided.

4.8.15 The inner diameter of the valve shall be as stated in table of requirements

4.8.16 All valves and stem extension shall be painted with 2 pack epoxy urethane according to the attached specifications. Annex B.

4.9 REQUIREMENTS FOR STEM EXTENSION ASSEMBLIES

4.9.1 Where provision is made for mounting a stem extension assembly, the closing shall be such that the complete assembly will form a rigid unit giving a positive drive under all conditions with no possibility of free movement between the valve body stem extension or its operator.

4.9.2 The inner drive stem extension shall be so designed as to ensure that full engagement with the valve stem is maintained in all attitudes of the valve and stem extension assembly.

4.9.3 Where a hollow valve stem extension (i.e. inner drive stem extension) is used, provision shall be made to equalize the pressure between the bore of the stem extension and the annulus.

To prevent ingress of water, the necessary vent hole in the inner hollow stem extension shall be drilled above the level of any vent in the outer stem extension tube.

4.9.4 The outer housing shall be fitted with a vent to atmosphere incorporating a relief valve set at 0.5 bar, to prevent pressure build up. Blow out plugs are not permitted.

4.9.5 The supply of a stem extension assembly shall include gaskets for both upper and lower mating flanges. To prevent the ingress of water, these gaskets shall be suitable to resist an external pressure of 1 bar.

4.9.6 The supply of the stem extension assembly shall include extensions to the vent and sealant connections. Separate extension lines shall be provided for each sealant injection point. The pipe used shall conform to API 5L, grade B, schedule 80, sized not less than the connection size in the main valve body.

4.9.7 Vent, drain and sealant lines shall either be butt welded or socket welded in construction, except that the sealant lines may incorporate a breakaway coupling where necessary for assembly purposes and threaded connections may be used for sealant valves. The connections into the valve shall be threaded or socket welded. Where socket welding is required and specified, the connection into the valve shall be by means of a purpose made fitting. The fitting shall incorporate a tapped hole, as per 4.8.7, to permit a screwed plug to be used to blank off any unused tapings.

Screwed connections shall not be seal welded.

4.9.8 Socket weld fittings for vent and drain lines shall be to 3000 1b as a minimum rating.

4.9.9 Vent drain and sealant line extensions shall be fitted with valves of nominal size equal to the connection size in the main valve. Two valves shall be provided, one

immediately adjacent to the valve body and one adjacent to the upper flange of the stem extension.

The top of the vent and drain lines shall be clearly marked to indicate which is the vent and which is the drain.

4.9.10 The vent, drain and sealant lines shall be provided by the contractor.

4.9.11 The vent, drain and sealant lines shall be adequately supported from the outer extension tube, which should not be drilled to provide such support. The design of the supports shall be such that operations of the valve, or discharge of gas will not impose excessive forces on the pipe work.

4.9.12 A stem extension should be assembled with the valve and should not be separated from the valve for dispatch to site.

5. TESTING

5.1 The following tests shall be performed on the material of pressure containing parts and welding ends :

a) Charpy impact test according to item 3.5 of this specification
b) Mechanical tests as per API 6D
c) Chemical test as per API 6D

5.2 All valves shall be subjected to a shell hydrostatic pressure test in accordance with API 6D requirements as per Annex A attached.

The supplier to submit test procedures for approval for all tests required.

The supplier to provide torque-testing figures of the valve/operator as described in API 6D Appendix C. C4, to ensure that the operation of the valve/operator is within specified limits.

5.3 Hydrostatic seat test shall be carried out as required by API 6D and Annex A attached. While the test pressure is on each side of the valve. It shall be operated at least twice to demonstrate satisfactory mechanical operation as well as continuous tightness after operation.

5.4 Valve shall be subjected to air seat test in accordance with API STD 6D requirements and Annex A attached.

If a double block and bleed check is provided the valve body to be vented to check satisfactory sealing of the valve seats.

Where valves are actuated, the valve and actuator are to be tested together, to prove the function of both valve and actuator.

Where valves incorporate stem extension assemblies, vent and sealant extensions

must also be included. These are to be tested to the relevant seat pressure with the valve closed to check efficiency of closing weld.

The supplier should give GASCO the opportunity to witness all the tests of all pupped valves after the pups are welded on.

Where valves are supplied without pups, the valve manufacturer must issue a weld procedure to GASCO for this work to be carried out on site.

5.5 The valve manufacture shall give sufficient advance notice in writing satisfactory to the company of the time and place at which hydrostatic and pneumatic testing is to be performed.

5.6 Operational torque test according to API 6D Appendix C.

5.7 Test certificates shall be submitted for verification.

6 INSPECTION

6.1 All body welds, pressure containing parts and seat ring areas shall be inspected 100% by ultrasonic or radiographic examination. Welds joining all non pressure containing parts of valves and gear boxes shall be subject to random 10% M.P.I. crack detection. Lifting lugs or brackets welded to valve bodies shall be subject to 100% M.P.I.

Test certificates should detail all testing completed during manufacture of the valve. This should include a certificate of conformity with a unique identification number.

6.2 All welding ends of valves shall be checked by magnetic particle inspection. Test certificates shall be provided for verification.

6.3 Handling and Transport

All precautions should be taken to avoid contamination of seats and seating components.

During transit valves must be supported. If chains/wire ropes are used to secure valves, they shall not come into contact with the valve or pup. Any damage will be cause for rejection.

Ends of valves shall be fitted with a protective cap to prevent any damage. The ends shall be sealed to prevent ingress of dirt or moisture. Ball valves shall be transported fully open.

6.4 **Marking**

The information required to identify the valve shall be generally as specified in the relevant standards (see.4.0) with the items listed below:

a) Manufacturer's Name
b) Valve size
c) Serial number
d) Rating
e) Maximum operating pressure
f) Test pressure
g) Design temperature - minimum & maximum
h) Valve body material
i) Ball, stem and seat ring material
j) Wall thickness of weld ends
k) Gross weight of assembled valve (Kg)
l) Valve operator and its manufacturer.

Valve, valve actuator, gearbox and stem extension shall be separately marked and identified.

Note: Marking requirements should be clearly stated on the name plate attached to the valve

7 DATA AND DRAWINGS

7.1 The manufacturer shall provide the following information

7.1.1 Outline dimensions and mechanical details for the valve.

7.1.2 Number of complete revolutions the wheel or other operating device to close or open the valve and torque required.

7.1.3 The maximum permissible torque and the rated torque required closing or opening the valve at the maximum pressure differential.

7.1.4 Head loss curve and data for the valve.

7.1.5 The offer shall include details of tests.

7.1.6 The offer shall include the certificate of ISO 9001, API 6D, and fire safe certificate.

The offer will not be accepted in case of any of these certificates are not included.

7.1.7 The Data Sheet shall include the details of the stops and locking device.

8 GENERAL / SERVICE CONDITION

-Pipeline axis and diameter

-Pipeline length

-Distance between valves

-Medium Natural gas

-Valve stem Vertical/Horizontal

-Drive power supply for actuator direct from pipeline

-Pipeline design flow rates and pressure

Flow rates

Pressure

-Pipeline design flow rates and pressure for actuator operation:

Flow rates (Max./Min.)

Pressure (Max./Min.)

-Maximum operating temperature +70°C

Minimum operating temperature - 5 °C

Ambient temperature +5 to +50°C

9 SPECIFICATION OF GAS OVER OIL ACTUATOR

9.1 General

9.1.1 All offered equipment should be suitable to work in a sandy desert and marine environment.
9.1.2 Selected actuator type's catalogue should be submitted showing all actuator accessories.
9.1.3 All electrical equipment should be explosion proof to EEx-d-IIC-T5-IP67and 24 V D.C.
9.1.4 Actuator torque table should be submitted.
9.1.5 All vent to atmosphere via 3 meters' high vent pipe.
9.1.6 Reference list should be attached to the technical offer.
9.1.7 Attached table of specifications should be completely filled, stamped and attached to the technical offer.
9.1.8 All equipment should be suitable to high pressure execution in accordance to the pipeline design pressure.
9.1.9 Any deviation from this specification should be highlighted in a separate section inside the technical offer.
9.1.10 All pneumatic tubing and fittings should be 316 stainless steel in accordance with the maximum pipeline design pressure.
9.1.11 All hydraulic tubing and fittings should be 316 stainless steel in accordance with the maximum pipeline design pressure.
9.1.12 Operating temperature -5 to +70 ° C.
9.1.13 Ambient temperature -5 to +50 ° C.

9.2 Hydraulic cylinder

9.2.1 Totally enclosed weatherproof carbon steel housing.
9.2.2 Scotch yoke mechanism with chromium plated guide bar and piston.

9.3 Gas over oil tanks

9.3.1 Two gas over oil tanks according to ASME VIII div. 1.
9.3.2 Complete with unidirectional flow control valve for speed adjustment.
9.3.3 Oil filter and oil dip stick.

9.4 Hydraulic manual override

9.4.1 Hydraulic hand pump.
9.4.2 Manual directional valve.

9.5 Actuator safety factor

9.5.1 Actuator minimum safety factor is 125%.

9.6 Emergency gas storage tank

9.6.1 Emergency gas storage tank should be sized for a minimum of four strokes (2 open + 2 close) in case of power supply failure.
9.6.2 Operating pressure in accordance with the maximum pipeline design pressure.
9.6.3 Complete with Isolation valve, Check valve, Relief valve and Pressure Gauge + isolation valve.

9.7 Limit switches

9.7.1 Two limit switches (open / close) in an explosion proof box to -IP67.
9.7.2 Each limit switch contains two DPDT mechanical contacts.
9.7.3 One contact will be used for indication and the other contact will be used for solenoid valve permission.
9.7.4 Local visual mechanical indicator.

9.8 Gas power supply

9.8.1 Complete with high pressure shuttle valve, two isolation valves, dehydrated filter with condensate separator and non return valve.

9.9 Control system

9.9.1 Control panel accessories should be sized for a maximum operating time of 3 seconds for inch valve size.
9.9.2 All control system components should be fitted inside a totally enclosed weatherproof carbon steel enclosure complete with vent valve.
9.9.3 Complete with two 24 VD.C. explosion proof solenoid valves (open / close) with manual override in compliance with EEx-d-IIC-T5.

9.9.4 Complete with pneumatic pilot operated valve with hand (push) spring return.
9.9.5 Complete with Local / Remote valve.
9.9.6 All internal wiring between or inside junction boxes should be included in the Supply
9.9.7 All required cable glands for inlet and outlet cables should be explosion proof and included in the supply.

9.10 Compatibility between valve and actuator

9.10.1 The manufacturer of the actuator, if different from the valve manufacturer, shall arrange with the valve manufacture on the fitness of the actuator including the gearing for use with the valve. Prior to the commencement of the fabrication of the actuator, the manufacturer of the actuator shall supply design drawings of the actuator to the valve manufacturer which shall submit said drawings to GASCO for approval.

9.11 Functional requirements

9.11.1 When a remote control command is given, the main valve shall close.

9.11.2 After closing the main valve by remote control command, the main valve shall only be opened by local – manual operation.

9.11.3 In case of electrical or pneumatic power supply failure the main valve shall not close, it shall stay in existing position.

9.12 Documentation

The following documentation should be submitted as minimum requirements

9.12.1 Complete catalogue including all actuator accessories.
9.12.2 Overall dimensional drawings.
9.12.3 Control schematic.
9.12.4 Wiring diagram.
9.12.5 Explosion proof certificates.
9.12.6 Actuator factory acceptance test certificate.
9.12.7 Operation and maintenance manual.
9.12.8 Spare parts list.
9.12.9 Actuator data sheet.
9.12.10 Actuator / Valve performance.

9.13 Data sheet

9.13.1 The following data sheet contains minimum information required and shall be completed by the contractor/manufacturer for every identical type and size of the actuator and ball valves.

9.13.1 Data sheet - Gas Over Oil Actuator

1	Data sheet no.		2	Object	Gas Over Oil Actuator	
3	Tag no.	GO - *	4	Designation		
5	Area code		6	Location module	*	
7	Run no.	*	8	Manufacturer	**	
9	Built year	**	10	Fabrication no.	**	
11	Actuator type/model	**	12	Refer. Dwg. No.	**	
DESIGN DATA						
13	Flow medium	Natural gas	14	Valve size	*	inch
15	Gas analysis	*	16	Valve press. Rating		lb.
17	Environmental data	*	18	Piping class		No.
19	Valve specification	Spec. no.	20	Act. design press.		bar g
21	Piping specification	Spec. no.	22	Act. oper. press.		bar g
23	Actuator specification	Spec. no.	24	Act. design temp. range		° C
25	Actuator design code	**	26	Ball valve fabr. no.		
27	Actuator design	** Pneumatic / Manual	28	Ball valve tag no.		
29	Service - Actuator	* Above ground	30	Ball valve data sheet		
31	Service - Ball valve	* Above / Below ground	32	Quantity		Each
PERFORMANCE DATA						
33	Actuator type	**	34	Gear start torque	**	Nm
35	Actuator/Valve compatibility	**	36	Gear run torque	**	Nm
37	Stem extension	*	38	Max. output torque	**	Nm
39	Remote control	**	40	Max. actuator torque	**	Nm
41	Hand pump	**	42	Time to open valve	**	sec.
43	Speed control	**	44	Time to close valve	**	sec.
45	Supply	***	46	Gear manufacturer	**	
47	Power	***	48	Gear type	**	
49	Explosion proofing	***	50	Direction of rotation	Clockwise / Anti clockwise	
51	Degree of protection	***	52	Gear ratio	**	

9.13.1 Data sheet - Gas Over Oil Actuator (Cont'd.)

DIMENSIONS AND CONNECTIONS						
53	Total L x B x H		54	Electrical connection	***	in/mm
55	Pneumatic connection		56	Total weight	**	Kg
57	Drain connection		58	Position indicator	**	
59	Vent connection		60	Compat. Act. & BV	**	
61	Lubricant injection		62	Exhaust 3 mt. to atmosphere	**	
MATERIAL, TESTS AND DOCUMENTATION						
63	Gear material	**	64	Factory acceptance test (FAT)	**	
65	Hydraulic cylinder material	**	66	Final acceptance by	**	
67	Gas cylinder material	**	68	Actuator certification	**	
69	Valve material	**	70	Equipment certification	**	
71	Connector material	**	72	Material certification	**	
73	Tubing material	**	74	Construction drawings	**	
75	Electrical cables	**	76	Inspection drawings	**	
77	Sealing material	**	78	Electrical drawings	**	
79	Lubricant	**	80	Actuator documentation	**	
81	Function test	**	82	Operating manual	**	
83	Painting	**	84	Maintenance manual	**	
85	Factory inspection	**	86	Spare parts list	**	
87	Others inspection	**	88	QA documents	**	

REMARKS	
*	GASCO / Contractor data and selection
**	Manufacturer data and confirmation
***	Optional manufacturer data

10. IMPORTANT NOTES:

10.1 Any exception to this specification shall be stated clearly in the offer.

10.2 If the manufacturer wishes to offer equivalent standards other than stated here in specifications, the equivalent specifications must be stated. Supporting documents and standards shall be submitted with the offer to prove the equivalent specification of each item.

10.3 Reference list is required to be attached with the offer.

10.4 The table of specifications attached here should be completely filled by the manufacturer and should be attached with the offer.

If the offer is submitted without completion of these tables then the offer will be rejected.

10.5 The offer should include detailed latest edition catalogues which includes the offered types of ball valve with detailed dimensions, drawings, rates, sized.....etc.

QUALITY PROCEDURE
PRESSURE TESTING OF BALL VALVES

1. Scope

This procedure applies to pressure testing all ball valves supplied to GASCO.

Reference standard :-

API Specification for Pipeline Valves API 6D

2. Valve Test Set up

The valve is set up in the appropriate test fixture and with test flanges having suitable pressure connections.

3. Shell Test

With the ball partly open the valve is filled completely with water, containing a rust inhibitor, via the body drain tapping 'D' (see Diagram 1). When full, valve 'D' is closed and hydrostatic pressure at the appropriate level (see Table 1 - Pressure and Duration Chart) is applied to the body shell via the body vent tapping 'B'. Pressure is observed by a gauge attached to the pressurising equipment, and if required, by a gauge and/or pressure recorder attached to either test flange (points 'X' or 'Y'). On reaching the required pressure, vent 'B' is closed and pressure maintained for specific periods as per Table 1. The valve is examined for leakage at closure to body joints, stem seals, gland plate to body joint and around any fitted plugs.

No leakage permitted.

The duration of the test is the period of time after the valve is fully prepared and under test pressure.

4. Seat Test (Hydrostatic)

The purpose of this test is to demonstrate pressure tightness of the seat seals irrespective of the direction of flow.

With the ball partly open the valve is filled completely with water. The ball is then fully closed against any operator travel stops and hydrostatic pressure at the appropriate level (see Table 1) is applied to one closure cavity via tapping 'A'.

Valves 'B' and 'C' are opened to atmosphere and water displaced by pressurisation will be released from point 'B'. On achieving the required pressure level valve 'B' is closed. Any leakage of water through the valve will show itself from valve 'C'. Alternatively, after allowing a few minutes for the valve to settle a glass sight tube may be attached to point 'C' and any change in fluid level monitored.

The above procedure is then repeated for the other closure cavity using point 'C' in instead of point 'A' for pressurisation and pressure monitoring respectively.

No leakage across the valve is permitted in either direction.

The duration of test is the period of time after the valve is fully prepared and under test pressure.

5. Seat Test (Pneumatic)

Having completed all hydrostatic testing the valve is blown down and drained of test fluid. The ball is fully closed against any operator travel stops. Valve 'B' is closed and Valve 'C' opened to atmosphere. Air at 14.51bs/sq.in (1 bar) is applied to one closure cavity via tapping 'A' and valve tested for leakage by application of soap solution at valve 'C'. At the same time leakage through any closure tapings are checked.

The above procedure is then repeated for the other closure cavity using point 'C' in lieu of point 'A' for pressurisation and pressure monitoring respectively.

The complete procedure is then repeated using air at 80lbs/sq.in.

No leakage across the valve permitted in either direction.

The duration of test is the period of time after the valve is fully prepared and under test pressure.

6. Actuator (functional) tests

Valves fitted with power actuators (electric, hydraulic, pneumatic, gas/hydraulic) are subject to functional tests to demonstrate the capability of the actuator to operate the valve against specified conditions. The actuator to be operated to the closed position to demonstrate the valve is free from leakage. Test details vary according to type of actuator concerned but, in principle, the test consists of opening the valve against a differential hydrostatic pressure usually at a level corresponding to working pressure in service. Data recorded may include power parameters (electrical, pressure) noted during operation and operating time to cycle the valve. These figures are then compared with specific requirements and actuator specification. The functional test should also be repeated using the manual facility of the power actuator.

For valves operated manually by wrench or hand wheel through a gearbox, operating torque will be checked by means of a torque wrench applied direct to the valve stem (wrench operated) or to the gearbox input shaft.

7. Certificates

A test certificate is issued for each valve showing type of test, pressure levels recorded, date of test and signature of person supervising the test as a minimum.

8. Alternative Pressure Tests

The following is a list of alternative tests which can be offered.

a) Direct upstream seat test (hydrostatic). As 4 above but checking for leakage at the body vent 'B'.

b) Direct upstream seat test (Pneumatic). As 5 above but checking for leakage at the body vent 'A'.

c) Direct downstream seat test (hydrostatic). Pressures in accordance with the table. Closure and body cavity tested simultaneously. Checking for leakage from downstream test fixture vent.

d) On final inspection check both seats simultaneously as downstream seats by pressurising body cavity to 80lbs/sq in air with valve closed. Viewed directly into the bore.

9. Additional Tests Required

a) Where valves are to be despatched with extended drain/vent pipe work fitted (screwed type). Check joint efficiency by pressurising pipe work to 80 lbs/sq in with valve closed after final assembly.

b) Where valves are to be despatched with extended drain/vent pipe work fitted (welded type). Pre-assembled pipe work to be hydrostatically tested to relevant seat test pressure as shown in the table followed by a similar complete assembly hydrostatic test with valve closed to check efficiency of closing weld.

c) Extended pipe work to be despatched for site fitting (welded type). Hydrostatic test of assembly to relevant body test pressure as shown in the table.

PRESSURE AND DURATION CHART

EXTRACTS FROM A.P.I.6D TABLES 5.1 AND 5.2

Valve Class	Valve Size	Shell Test		Seat Test	
		Pressure	Duration	Pressure	Duration
150	6 - 10 inch 12 - 18 inch 20 inch +	425 lb/in^2	5 Min 15 Min 30 Min	300 lb/in^2	5 Min
300	6 - 10 inch 12 - 18 inch 20 inch +	1100 lb/in^2	5 Min 15 Min 30 Min	800 lb/in2	5 Min
400	6 - 10 inch 12 - 18 inch 20 inch +	1450 lb/in^2	5 Min 15 Min 30 Min	1060 lb/in^2	5 Min
600	6 - 10 inch 12 - 18 inch 20 inch +	2175 lb/in^2	5 Min 15 Min 30 Min	1600 lb/in^2	5 Min
900	6 - 10 inch 12 - 18 inch 20 inch +	3250 lb/in^2	5 Min 15 Min 30 Min	2400 lb/in^2	5 Min
1500	6 - 10 inch 12 - 18 inch 20 inch +	5400 lb/in^2	5 Min 15 Min 30 Min	4000 lb/in^2	5 Min

SPEC. 1 Painting

PAINTING SPECIFICATION FOR ABOVEGROUND FACILITIES

* For pipes, valves, bends and other fittings.

Paint cycle shall be as follows:

Surface preparation : sa 3.

9

1st Layer : Zinc Epoxy, 1 coat DFT 75 µm.

2nd Layer : High Built (HB) Epoxy 200 µm.

3rd Layer : Polyurethane (PU) 50 µm.

Total DFT : 325 µm.

Final Color : RAL 7035 Light Gray

SPEC. 2 Painting

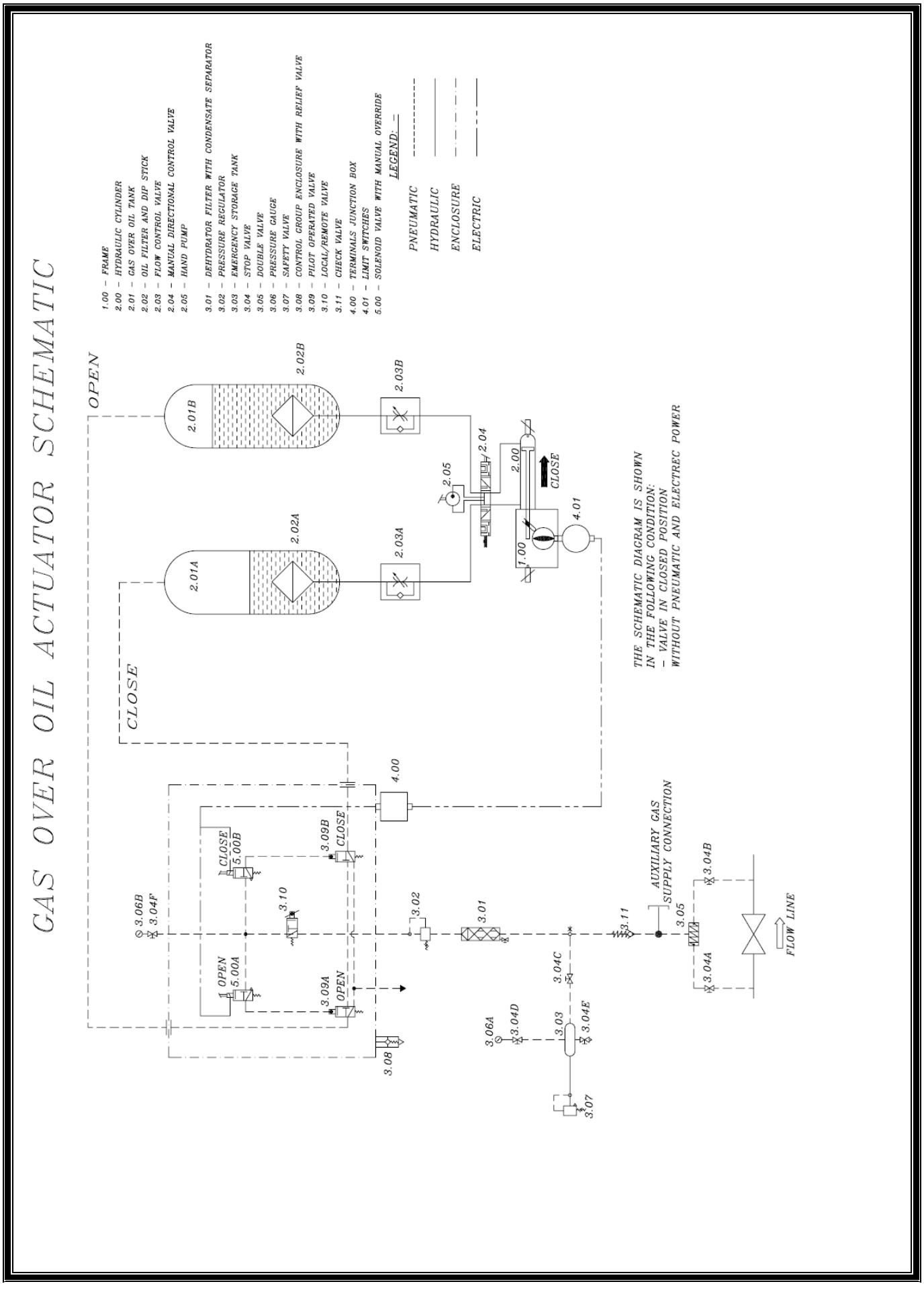
PAINTING SPECIFICATION FOR

UNDERGROUND FACILITIES

OPERATIONS CHART FOR 2-PACK EPOXY COATINGS

OPERATIONS		Period before Handling or next coating operation		COMMENTS
No.	Description	Min.	Max.	
1	Blast clean.		4h	for Sa 2 1/2 (1S0.8501-1.1988) Profile 75-100 micro
2	Clean all surfaces	2	24	To remove contamination
3	Spray or Brush apply layer of coating material			For moist or dry surfaces
4	Moisture tolerant epoxy (Dry or moist surfaces)			Surface must only be damp (i.e. no water droplets forming) Typical film thickness (wet or dry) 250 microns
5	Apply further layers to give 2.5 mm. minimum thickness			Use 2 colours of material. Alternate colour for each layer of coating and brush at right angles to previous layer.

Final Color : RAL 7035 Light Gray


GAS OVER OIL ACTUATOR SCHEMATIC
1.00 – FRAME
2.00 – HYDRAULIC CYLINDER
2.01 – GAS OVER OIL TANK
2.02 – OIL FILTER AND DIP STICK
2.03 – FLOW CONTROL VALVE
2.04 – MANUAL DIRECTIONAL CONTROL VALVE
2.05 – HAND PUMP
3.01 – DEHYDRATOR FILTER WITH CONDENSATE SEPARATOR
3.02 – PRESSURE REGULATOR
3.03 – EMERGENCY STORAGE TANK
3.04 – STOP VALVE
3.05 – DOUBLE VALVE
3.06 – PRESSURE GAUGE
3.07 – SAFETY VALVE
3.08 – CONTROL GROUP ENCLOSURE WITH RELIEF VALVE
3.09 – PILOT OPERATED VALVE
3.10 – LOCAL/REMOTE VALVE
3.11 – CHECK VALVE
4.00 – TERMINALS JUNCTION BOX
4.01 – LIMIT SWITCHES
5.00 – SOLENOID VALVE WITH MANUAL OVERRIDE
LEGEND: –
PNEUMATIC
HYDRAULIC
ENCLOSURE
ELECTRIC
OPEN
CLOSE
2.01B
2.02B
2.03B
2.01A
2.02A
2.03A
2.04
2.05
2.00
1.00
4.01
4.00
3.09B
CLOSE
5.00B
3.09A
OPEN
5.00A
3.10
3.06B
3.04F
3.02
3.01
3.11
AUXILIARY GAS
SUPPLY CONNECTION
3.05
3.04B
3.04A
FLOW LINE
3.04C
3.06A
3.04D
3.03
3.04E
3.07
3.08
THE SCHEMATIC DIAGRAM IS SHOWN
IN THE FOLLOWING CONDITION:
– VALVE IN CLOSED POSITION
WITHOUT PNEUMATIC AND ELECTREC POWER

Egyptian Natural Gas Co.
G A S C O
Gen. Dept. of Engineering Affairs

Small Bore Ball Valves Specification

GENERAL SPECIFICATION

FOR

SMALL BORE VALVES

- NEEDLE VALVE
- BALL VALVE
- PLUG VALVE

General Specification For Small Bore Valves			
Specs. No. / MS / 010 Rev. 3			
Issue:	**Aug. 2019**	**No. of Sheets:**	**5**

CONTENTS

STANDARD FOR PIPE & FITTINGS
SMALL BORE VALVES

1. SCOPE

This specification specifies requirements for valves of nominal size 40mm and below for use with Natural Gas at pressures up to 100 bar and in the temperature range -20 to 150^{o}C, and includes valves of needle, ball and plug types.

2. GENERAL

2.1 Such valve requirements is generally covered under ANSI B 16.34, which includes instrument valves normally used as isolation valves to equipment/instrumentation or small bore piping system, either threaded, flanged or using compression couplings as specified in table of requirement.

2.2 All valves shall be designed to be capable of sealing against the rated pressure in both directions and passing Natural Gas in both directions irrespective of the preferred direction of flow.

2.3 Where carbon steel valves are used, the fittings and piping shall be compatible.

3. DESIGN

3.1 Needle Valves

3.1.1 For general use, needle valves are sized up to 25mm, and shall be used for sensitive control, coupled with multiple turn operation.

3.1.2 Valves shall be of stainless steel body, spindle and connections.

3.1.3 Connections shall be either N.P.T. (Nominal Pipe Thread) screwed or compression couplings, either of the single ferrule or double ferrule type.

3.1.4 All compression coupling type valve ends shall be manufactured from austenitic stainless steel type 316.

3.1.5 For normal use a hard seat, soft tip combination is most suitable for durability. Alternatively where there is a degree of weld slag or other foreign matter entrained in the pipework system, then seat hard and tip hard combination should be considered.

3.1.6 Needle valve spindles may be either: -

a) Two-piece non-rotating tip type

or

b) Rotating tip type. (See typical drawing)

3.1.7 Threaded stem valves shall be designed to prevent binding or galling.

3.2 Ball Valves

3.2.1 Design shall be of a "floating ball" assembly with 1/4 turn operation.

3.2.2 Preferable to be of split body design with N.P.T. screwed, socket-weld or flange connections.

3.2.3 Body may be of carbon steel or stainless steel material.

3.2.4 Ball & stem to be stainless steel material, or alternatively the carbon steel ball shall be Chrome or Nickel/Chrome plating or coating of not less than 0.03mm thickness, and of plating hardness of not less than 500 HB.

3.2.5 Valve to include for soft or hard body seals of acceptable material either side of the ball.

3.3 Plug Valves

Lubricated plug valves shall be of the "balanced" type with 1/4 turn operation and to API 599.

3.3.2 Valve plug to be of carbon steel material with an acceptable corrosive resistant plating or coating of not less than 0.03mm thickness.

Plating hardness shall be a minimum of 500HB.

3.3.3 Valve connections shall be N.P.T. screwed or flanged, flanges shall be to ANSI B1 6.5.

3.3.4 Flanges shall be to ANSI B 16.5.

3.3.5 Primary seals shall include for suitable lubricant injection.

4. DESIGN SAFETY

4.1 Where pressure retaining parts or assemblies are held together by means of screwed components the valve shall be designed to prevent accidental dis-assembly under pressure.

4.2 Union type bonnets or screwed in gland assemblies shall be securely locked by an approved method.

4.3 Needle valves shall be provided with a back stop to prevent the needle spindle being unscrewed from the body.

5. MATERIALS

5.1 General

5.1.1 For austenitic stainless steel valves designed with compression coupling type ends - either via a stud coupling being screwed in at time of manufacture or by integral casting/turning techniques - all parts of the end fitting (body, nut and ferrule) shall be manufactured from austenistic stainless steel to ASTM A 182/A 182-86a Grade F316. Ferrules to be Chrome plated.

5.2 All threads to be female N.P.T to specification ASME B1.20.1.

5.3 Compression couplings shall be to BS 4368 Parts 1,2, and 3 using either single or double ferrule joints.

5.4 Valve bodies and plug may be of carbon steel to ASTM A 216 WCB or steel to ASTM - A105, stainless steel to ASTM A 351 CF 8m or to ASTM A 182 F 316.

5.5 For plug and ball parts material to be forged carbon steel to ASTM - A350LF2 ASTM - A105 or equivalent. Stainless steel to ASTM - A 182 F 316.

5.6 Stems shall be stainless steel to ASTM A 182 F 316 or equivalent.

5.7 Needle valve spindle soft tip material or body seat shall be Nylon insert or equivalent.

5.8 Where stainless steel material is used there is no necessity to include for corrosion protective measures to exposed parts.

5.9 Where carbon steel material is used corrosion protective measures shall be applied.

6. VALVE HANDLES

6.1 The selection of valve handle will be determined by the required operating mode of the valve.

6.2 For quarter turn valves, a T-bar handle is advantageous, being quick and easy to operate. Wheel handles are appropriate where a sensitive control may be necessary especially at opening/closing for example with needle valves.

6.3 For strategic located valves especially on pipe systems, consideration shall be given to the valve being lockable either in the open or closed positions.

7. TESTS AND INSPECTION

The valves shall be tested and inspected according to the requirements of ANSI B 16.34 and API 598.

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Annex-E

Table of Confirmation

TABLE OF BALL VALVES SPECIFICATIONS CONFIRMATION

INQUIRY NO. : .....
QUOTATION NO : .....
MANUFACTURE NAME : .....

SPECIFICATION	CONFIRMATION OF REQUIREMENTS				NOTES
	ITEM #	ITEM #	ITEM #	ITEM #	
Design and Construction					
- Size (Inch)					
- Drawing Number					
- In case of issued "Purchase Order", Valve dimensional drawings related material part lists should be submitted for GASCO approval Before Valve Fabrication.					
- Rating Class ANSI (600)					
- Standard Code API 6D					
General Service Conditions - Fluid Medium: Natural gas - Ambient temperature: -5 ºC to + 50 ºC - Operating Temperature: Min./Max. -5/+70 ºC - Pipeline operating pressure: Min./Max. 25/70 bar - Pipeline Design pressure : 77 bar					
Ends Connections: - Butt Welding End acc. to ANSI B 31.8 - Flanged R.F. End acc. to ANSI B 16.5 (NPS≤24") - Flanged R.F. End acc. to MSS SP44 (NPS>24")					
- Fully Welded Construction body (bolted body not accepted)					
- Full bore					
- Vent& drain ball valves acc. to item (4.8.6)					
- Sealant injection system acc. to item (4.8.7)					
- Double block and bleed					
- Double piston effect seat design					
- Trunnion mounted					
- Bi directional					
- Anti blow out stem					
- Anti-static design					
- One piece body without any bolted body joints.					
- Maximum operating temperature 70oC - Minimum operating temperature -5oC					
- Maximum working pressure (PSI)					State the value
- Stem seal is replaceable while line is in operation acc. to item (4.8.11)					
- The ball is solid one piece without any weld.					
For All Extended Stem Valves					
- Stem extension acc. to item (4.9)					
- Two valves shall be provided, one immediately adjacent to the valve body and one adjacent to the upper flange of the stem extension accordance with item (4.9.9).					
- Valves shall be supplied complete with a stem assembly together, actuator can be supplied separate.					
Dimensions					
- Face-to-face dimension acc. to API 6D (short pattern is not accepted)					
- Valve overall dimension shall be according to API 6D + 2 pup length,					
- Stem Length measured from valve C.L.					

TABLE OF BALL VALVES SPECIFICATIONS CONFIRMATION (Continue)

SPECIFICATION	CONFIRMATION OF REQUIREMENTS				NOTES
	ITEM #	ITEM #	ITEM #	ITEM #	
Operation					
- Unsheltered					
- Stem position vertical or horizontal					
- Wrench + lever					
- With actuator acc. to item (9)					
- Actuator and line break					
- Gear box as per item (item 4.8.12)					
- The valve is suitable for sealing injection for ball and stem					
Materials					
- Body					State the material
- Ball					State the material
- Ball plating (nickel - chrome) (Min. thickness 0.02 mm, Min hardness 500 HV)					State the material
- Stem					State the material
- Primary and secondary seal for BALL					State the material
- Primary and secondary seal for STEM					State the material
- Seat ring (Min. thickness 0.02 mm)					State the material
Valve Welding Ends					
- Welding ends material should be suitable for welding to pipes of API 5L acc. to item (3.3)					
- Welding end material					State material
- Yield strength (PSI)					State the value
- Wall thick. (inch) acc. to item (4.3) of specs.					State the value
- Fracture toughness of welding ends as per item (3.6)					
Pup Pieces:					
- Pup Material					State the value
- Yield strength (PSI)					State the value
- Wall Thickness (inch)					State the value
- Pups Length					State the value
- Material selected for valve welding ends shall have a maximum carbon equivalent of 0.42 % acc. to item (3.4)					
- Material selected for pup pieces (if exist) shall have a maximum carbon equivalent of 0.42 % acc. to item (3.4)					
Painting (Valve & Actuator)					
- For above ground valve acc. to GASCO SPECS.-1					
- For underground valve acc. to GASCO SPECS.-2					
- Painting color RAL 7035 light gray					
FIRE SAFE TEST					
- Acc. to item (4.8.8) of specs API 6FA, API 607, and BS 6755					
- Fire safe graphite stem seal					
TESTING					
- Tests required on weld end and pressure containing parts material acc. to item (5.1)					
- The valve shall be tested with actuator and external stem if any acc. to item (5.4)					
- Shell hydrostatic test pressure in PSI acc. to item (5.2) of specs.					State the value

TABLE OF BALL VALVES SPECIFICATIONS CONFIRMATION (Continue)

SPECIFICATION	CONFIRMATION OF REQUIREMENTS				NOTES
	ITEM #	ITEM #	ITEM #	ITEM #	
- Seat hydrostatic test pressure in PSI acc. to item (5.3) of specs.					State the value
- Pneumatic air seat test acc. to item (5.4) of specs					State the value
- Hydrostatic test shall be complete with pup piece					
INSPECTION					
- Ultrasonic or radiographic examination for body's weld acc. to item (6.1) of specs.					
- M.P.I. for welding ends acc. to item (6.2) of specs.					
TEST AND INSPECTION CERTIFICATES					
- To be provided for approval					
Accessories required for all quantity :					
- 3 hand guns for sealant injection					
- Sealant sticks quantity (60)					
Inspection and Testing for Valves dates should be sent to GASCO before 45 days from the suggested dates.					

Note: Sign by (√) for confirmed item and (X) for unconfirmed items.

Important Notes

1. Materials selected for body should acc. to item (3.0) of specs and API 6D
2. All material should be stated in ASTM
3. Data and Drawings stated in item (7) of specs should be submitted with the offer.

Acc. to	=	According to
Wall thick.	=	Wall Thickness
Specs	=	Specification
R.F.	=	Raised Face
R.T.J	=	Ring Type Joint

4. The vendor must submit table of confirmation completely filled and signed with the offer otherwise the offer will be cancelled.

5. Any technical deviation to line pipe specs. must be stated clearly. Production schedule must be submitted.

6. Valve weight for 2'' ball valve shouldn't exceed 25 kg

TABLE OF GAS OIL ACTUATOR SPECIFICATIONS CONFIRMATION

MANUFACTURE NAME : .....

SPECIFICATION	CONFIRMATION	
	YES	NO
Carbon steel housing, scotch yoke mechanism with chromium plated guide bar		
Hydraulic cylinder		
2 gas oil tanks according to ASME V III div. 1 code with oil filters		
Gas filter and dehydrating cartridge.		
Pilot operated valve with hand (push) spring return operation facilities		
Control valve enclosure with vent valve		
Local mechanical position indicator		
Speed control valves		
Hand pump distributor for emergency operation		
Emergency gas storage tank sized for 4 stroke		
Pneumatic tubing and fittings 316 SS		
Hydraulic tubing and fitting 316 SS		
Exhaust vent 3m. high vent pipe		
Line connections, equipped with stop valves		
Type selected to be submitted with it's catalogue.		

Note: Sign by (√) for confirmed item and (X) for unconfirmed items.

TABLE OF SMALL BORE VALVES SPECIFICATION CONFOMATION

TENDER NO.: .....

OFFER NO.: .....

MANUFACTURER NAME: .....

SPECIFICATION	Confirmation		NOTES
	YES	NO	
Type of the valve			State the type
Rating			
- Temperature range (-5 to 100°C)			
Design			
According to ANSI B 16.34			
- The valve can pass gas in both directions			
Material			
- Body			State the material
- Ball			State the material
- Chrome Plating for forged steel ball			
- Plating hardness Hardness > 500 HB			
- Stem			State the material
- Seal			State the material
Design Safety			
Shall be according to item 4			
Valve Handle : Acc. to item 6			
Test and Inspection			
According to item 7			

Note: Sign by (√) for confirmed item and (X) for unconfirmed items.

IMPORTANT NOTE:-

1- **The vendor must submit table of confirmation completely filled and signed with the offer otherwise the offer will be cancelled.**
2- **Any technical deviation to this specs. must be stated clearly**
3- **Valve weight for 1'' ball valve shouldn't exceed 6 kg and for the 1/2'' the weight shouldn't exceed 3 kg**

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Material Requisition

Project name:	PL42_198 & PL42_228 GAS PIPELINE PROJECT

Material	Specs no.	Project no.
BALL VALVES	MS 009	PL42_198 & PL42_228
	Specs. Rev.	Requisition no.
Part-A: FORGED STEEL BALL VALVES	12	7241

Material Requisition Status

Rev. no.	Date	Revisions	Originator	Approval		
0	30/3/2023	Issue for Tender		E.F.	KH.B.	Y.M.

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Continuation Sheet

REQN. no.	PRJ. no.	Rev.	Date
7241	PL42_198 & PL42_228	0	30/3/2023

Item	Description	Unit	QTY.	Unit Price	Total Price
1	42" Ball Valve, F.B, Rating 600#, W.E, Valve with Pup Pieces (L=50cm) & material API 5L X65M PSL2 (SAWL, One seam Weld) W.Thk =0.812", Valve Design API 6D, (W.Gear + H.W).	Each	30		
2	42" Ball Valve, F.B, Rating 600#, W.E, Valve with Pup Pieces (L=50cm) & material API 5L X65M PSL2 (SAWL, One seam Weld) W.Thk =0.812", Valve Design API 6D, (Gas Over Oil Actuator).	Each	13		
3	42" Ball Valve, F.B, Rating 600#, W.E, Extended Stem (L=250cm, measured from valve C.L. to valve top flange),Valve with Pup Pieces (L=50cm) & material API 5L X65M PSL2 (SAWL, One seam Weld) W.Thk =0.812", Valve Design API 6D, (W.Gear + H.W).	Each	8		
4	42" Ball Valve, F.B, Rating 600#, W.E, Extended Stem (L=250cm, measured from valve C.L. to valve top flange), Valve with Pup Pieces (L=50cm) & material API 5L X65M PSL2 (SAWL, One seam Weld) W.Thk =0.812", Valve Design API 6D, (Gas Over Oil Actuator).	Each	8		
5	36" Ball Valve, F.B, Rating 600#, W.E, Valve with Pup Pieces (L=50cm) & material API 5L X65M PSL2 (SAWL, One seam Weld) W.Thk =0.688", Valve Design API 6D, (W.Gear + H.W).	Each	4		
6	36" Ball Valve, F.B, Rating 600#, F.E., R.F., Valve Design API 6D, (W.Gear + H.W).	Each	4		
7	32" Ball Valve, F.B, Rating 600#, W.E, Valve with Pup Pieces (L=50cm) & material API 5L X60M PSL2 (SAWL, ONE SEAM WELD) W.Thk =0.688", Valve Design API 6D, (W.Gear + H.W).	Each	4		
8	32" Ball Valve, F.B, Rating 600#, W.E, Valve with Pup Pieces (L=50cm) & material API 5L X60M PSL2 (SAWL, ONE SEAM WELD) W.Thk =0.688", Valve Design API 6D, (Gas Over Oil Actuator).	Each	1		
9	32" Ball Valve, F.B, Rating 600#, F.E., R.F., Valve Design API 6D, (W.Gear + H.W).	Each	1		

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Continuation Sheet

REQN. no.	PRJ. no.	Rev.	Date
7241	PL42_198 & PL42_228	0	30/3/2023

Item	Description	Unit	QTY.	Unit Price	Total Price
10	24" Ball Valve, F.B, Rating 600#, W.E, Valve with Pup Pieces (L=50cm) & material API 5L X56N PSL2 (Seamless or ERW) W.Thk =0.562", Valve Design API 6D, (W.Gear + H.W).	Each	10		
11	24" Ball Valve, F.B, Rating 600#, W.E, Valve with Pup Pieces (L=50cm) & material API 5L X56N PSL2 (Seamless or ERW) W.Thk =0.562", Valve Design API 6D, (Gas Over Oil Actuator).	Each	1		
12	24" Ball Valve, F.B, Rating 600#, F.E., R.F., Valve Design API 6D, (W.Gear + H.W).	Each	1		
13	12" Ball Valve, F.B, Rating 600#, W.E, Valve with Pup Pieces (L=25cm) & material API 5L X52N PSL2 (Seamless or ERW) W.Thk =0.375", Valve Design API 6D, (W.Gear + H.W).	Each	12		
14	10" Ball Valve, F.B, Rating 600#, W.E, Valve with Pup Pieces (L=25cm) & material API 5L X52N PSL2 (Seamless or ERW) W.Thk =0.365", Valve Design API 6D, (W.Gear + H.W).	Each	12		
15	10" Ball Valve, F.B, Rating 600#, W.E, Extended Stem (L=250cm, measured from valve C.L. to valve top flange), Valve with Pup Pieces (L=25cm) & material API 5L X52N PSL2 (Seamless or ERW) W.Thk =0.365", Valve Design API 6D, (W.Gear + H.W).	Each	16		
16	2" Ball Valve, F.B Rating 600#, W.E, Valve with Pup Pieces (L=20cm) & material API 5L X52N PSL2 (Seamless) W.Thk =0.218", Valve Design API 6D (Wrench Operated).	Each	165		

General Note:

1. Pup piece material shall be (API 5L PSL2) with grade and wall thickness as per table above. Equivalent material are totally not accepted.
2. Any differences in the Specified Minimum Yield Strength "SMYS", for both weld ends and pipes, shall be taken into account when calculating wall thicknesses at weld ends. Providing that wall thickness ratio shall not exceed 1.5 times as per ASME B31.8.
3. Valve weight for 2'' ball valve shouldn't exceed 25 kg

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Material Requisition

Project name:	PL42_198 & PL42_228 GAS PIPELINE PROJECT

Material	Specs no.	Project no.
BALL VALVES	MS 010	PL42_198 & PL42_228
	Specs. Rev.	Requisition no.
Part-B: SMALL BORE VALVES	3	7241

Material Requisition Status

Rev. no.	Date	Revisions	Originator	Approval		
0	30/3/2023	Issue for Tender		E.F.	KH.B.	Y.M.

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Continuation Sheet

REQN. no.	PRJ. no.	Rev.	Date
7241	PL42_198 & PL42_228	0	30/3/2023

Item	Description	Unit	QTY.	Unit Price	Total Price
1	1" Ball Valve, Full Bore, Split (Screw) Body design with FNPT (ASME B1.20.1, Taper type), Rating 1500#.	Each	85		
2	1/2" Ball Valve, Full Bore, Split (Screw) Body design with FNPT (ASME B1.20.1, Taper type), Rating 1500#.	Each	235		

Note:

1. **Weight for 1'' ball valve shouldn't exceed 6 kg and for the 1/2'' the weight shouldn't exceed 3 kg**.