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National Iranian Gas Co.

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Research and Technology Management

امور تدوین استانداردها

Standardization Division

IGS

Iranian Gas Standards

Specification for :

مشخصات فنی :

Odorizer , Bypass Type

دستگاه بودارکننده گازنوع عبوری

APPROVED

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FOREWORD

This standard is intended to be mainly used by **NIGC** and contractors and has been prepared on interpretation of recognized standards , technical documents , knowledge ,backgrounds and experiences in gas industries at national and international levels.

Iranian Gas Standards (**IGS**) are prepared , reviewed and ammended by technical standard committees within NIGC Standardization Div. and submitted to the **NIGC**'s "**STANDARDS COUNCIL**" for approval .

IGS Standards are subject to revision , amendment or withdrawal , if required , thus the latest edition of **IGS** shall be checked/inquired by **NIGC** users .

This standard must not be modified or altered by the end users within **NIGC** and her contractors. Any deviation from normative references and/or well known manufacturers specifications must be reported to Standardization div.

Any comments from concerned parties on **NIGC** distributed **IGS** are welcome to technical standards committees and will receive serious attention and consideration should a revision to standards is recommended .

GENERAL DEFINITIONS :

Throughout this standard the following definitions , where applicable , should be followed :

1- "**STANDARDIZATION DIV.**" has been organized to deal with all aspects of industrial standards in NIGC . Therefore , all queries for clarification or amendments are requested to be directed to the mentioned div.

2- "**COMPANY** " : refers to national iranian gas company .

3- "**SUPLIER**" : refers to a firm who will supply the service , equipment or material to igs specification whether as the prime producer or manufacturer or a trading firm .

4-"**SHALL**" : is used where a provision is mandatory.

5-"**SHOULD**" : is used where a provision is advised only.

6-"**MAY**" : is used where a provision is completely discretionary.

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پیشگفتار

۱- این استاندارد/دستورالعمل بمنظور استفاده اختصاصی در شرکت ملّی گاز ایران و شرکتهای فرعی وابسته تهیه شده است.

۲- شرکت ملّی گاز ایران در مورد نیازهای عمومی از استانداردهای وزارت نفت (IPS)و در موردنیازهای اختصاصی از استانداردهای اختصاصی خود(IGS) استفاده می نماید.

۳- استانداردهای شرکت ملّی گازایران (IGS) توسط کمیته های تخصصی استاندارد متشکل از کارشناسان بخش های مختلف و یا مشاور تهیه می شود و توسط شورای استاندارد (منتخب هیئت مدیره شرکت ملی گازایران) به تصویب میرسند.

۴- در تنظیم متن استانداردهای(IGS) از کلیه منابع شناخته شده استانداردی، اطلاعات فنی- تخصصی مربوط به صنایع گاز دنیا،مشخصات فنی تولیدات سازندگان معتبرجهانی ونیزاز نتیجه تحقیقات و تجربیات کارشناسان ومتخصصان داخلی بر حسب مورد استفاده می شود. همچنین بمنظوراستفاده هرچه بیشترازتولیدات داخلی قابلیت های سازندگان داخلی نیزمورد توجه قرارمیگیرد.

۵- استانداردها از طریق پایگاه اینترنتی شرکت*ویالوح فشرده (CD) در اختیار واحدها و کاربران قرار می گیرد .

۶- استانداردها بطور متوسط هر ۵ سال یکبار و یادرصورت ضرورت زودتر،مورد بازنگری وبروزرسانی قرار میگیرند. بنابراین کاربران باید همیشه آخرین نگارش را مورد استفاده قرار دهند.

۷- هرگونه نظر و یا پیشنهاد اصلاح در مورد استانداردها مورداستقبال وبررسی قرار خواهد گرفت و در صورت تأئید، استانداردمربوطه نیزموردتجدیدنظرقرارخواهدگرفت .

تعاریف عمومی

درمتن استانداردهای (IGS)ازتعاریف واصطلاحات زیراستفاده مشود.

۱- "شرکت"(COMPANY): منظورازشرکت "شرکت ملی گازایران"ویاشرکتهای فرعی وابسته میباشد.

۲- "فروشنده"(SUPPLIER/VENDOR): به فردیاموسسه ای اطلاق میگرددکه تعهدی رانسبت به شرکت تقبل نموده است.

۳- "خریدار"(PURCHASER): منظورازخریدار"شرکت ملی گازایران"ویاشرکتهای فرعی وابسته میباشد.

۴- "SHALL" : درمواردی بکاربرده میشودکه انجام خواسته موردنظراجباری است

۵- "SHOULD" : درمواردی بکاربرده میشودکه انجام خواسته موردنظرترجیحی و درعین حال اختیاری است

۶- "MAY" : درمواردی بکاربرده میشودکه انجام کاربه شکل موردبحث نیز قابل قبول میباشد

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*آدرس پایگاه اینترنتی(http://igs.nigc.ir) ، آدرس الکترونیکی(nigcigs@nigc.ir)

IGS-PM-100
ODORIZER , BY-PASS TYPE

SCOPE

1- THIS SPECIFICATION COVERS THE REQUIREMENTS FOR DESIGN, MATERIAL , FABRICATION, ISPECTION , MARKING, PACKING AND SHIPPING OF PACKAGED BY-PASS TYPE GAS ODORIZER TO BE USED IN NATURAL GAS PRESSURE REDUCING STATIONS. IN CASE OF ANY DEVIATION FROM THIS SPECIFICATION, IT SHALL BE CLEARLY STATED ON TECHNICAL INFORMATION SUBMITTED BY THE MANUFACTURER. THE MANUFACTURER SHALL FURNISH COMPLETE UNIT INCLUDING ALL NECESSARY PARTS TO INSURE SATISFACTORY, ECONOMICAL AND SAFE OPERATION.

2- THIS SPECIFICATION DOES NOT SUPERSEDE THE ACCEPTED PRESSURE VESSEL CODES BUT ONLY SUPPLEMENTS THEM WITH REGARD TO CERTAIN CONDITIONS NOT FULLY COVERED IN THE CODES.

3- THIS EQUIPMENT SHALL BE DESIGNED FOR FULL LOAD , UNATTENDED , CONTINOUS OPERATION WITHOUT THE PROVISION OF SPECIAL HOUSING OR SHELTER ETC.

CODES AND STANDARDS

ALL ODORIZERS SHALL BE IN COMPLIANCE WITH THIS SPECIFICATION AND THE LATEST EDITIONS OF THE FOLLOWING STANDARDS AND CODES:

1- DESIGN , MATERIAL , MANUFACTURING AND INSPECTION :
ASME BOILER & PRESSURE VESSEL CODE , SECTION VIII DIV I
“ UNFIRED PRESSURE VESSELS”

2- WELDING AND BRAZING QUALIFICATION : ASME SECTION IX

3- PIPE FLANGES & FLANGED FITTINGS : ANSI B.16.5

4- FORGED STEEL FITTINGS , SOCKET WELDING & THREADED : ANSI B.16.11

5- GASKETS : ANSI B.16.20

6- BOLTING : ANSI B.18.2 AND B.2.2

7- GAS TRANSMISSION AND DISTRIBUTION PIPING SYSTEM: ASME / ANSI B.31.8

8- PRESSURE PIPING : ANSI B.31.3

9- BUTTERFLY VALVES : API 607

GENERAL REQUIREMENTS

1- THE BY-PASS ODORIZER SHALL OPERATE IN OUTDOOR CONDITION UNDER DIRECT SUN & RAIN.

2- ODORIZER SHALL BE DESIGNED TO WITHSTAND THE LOAD EXERTED BY INTERNAL PRESSURE, WEIGHT OF THE VESSEL , WIND , EARTHQUAKE , TMPACT AND TEMPERATURE.

3- MAXIMUM CAPACITY SHALL BE 10,000 STANDARD CUBIC METER PER HOUR.

4- USING FLOW AS CONTROL , A FLANGED BUTTERFLY VALVE SHOULD BE USED IN THE MAIN LINE TO DEVELOP APPROPRIATE DEFFFERENTIAL PRESSURE.

5- THE BUTTERFLY VALVE WITH ALL NECESSARY FLANGES AND STUD BOLTS SHALL BE SUPPLIED BY MANUFACTURER.

6- ODORANT TANK SHALL BE MADE OF CARBON STEEL ASTM A 516 GRADE 70 INTERNALLY COATED WITH 300 MICRONS EPOXY ACCORDING TO BS 5493 .

7- ODORANT TANK SHALL BE EQUIPPED WITH APPROPRIATE RELIEF VALVE ACC. TO AND STAMPED TO ASME SECTION VIII DIV. I COMPLETE WITH LOCKABLE BLOCK VALVE TOGETHER WITH APPROPRIATE CHARCOAL FILTER. THE BLOCK VALVE SHALL BE LUBRICATED PLUG VALVE ACCORDING TO API 6D.

8- VENT VALVE SHALL BE COMPLETE WITH APPROPRIATE CHARCOAL FILTER.

9- ALL ODORIZER UNITS SHALL HAVE CARRYING LUGS SUITABLE FOR HANDLING AND TRANSPORT PURPOSES.

10- THE MAX. ALLOWABLE WORKING PRESSURE SHALL BE LIMITED BY SHELL AND HEAD.

11- FABRICATION OF ODORIZER SHALL NOT COMMENCE PERIOR TO RECEIPT OF DRAWING AND DESIGN CALCULATIONS APPROVAL FROM THE PURCHASER.

12- ALL PRESSURE PARTS AND NON-PRESSURE PARTS DIRECTLY WELDED TO THE PRESSURE SHELL OR OTHERWISE NON-REMOVABLE AND EXPOSED TO THE CONTAINED MEDIA SHALL HAVE EITHER THE CORROSION ALLOWANCE ADDED

OR BE FABRICATED FROM CORROSION RESISTANCE MATERIAL .

NO CORROSION ALLOWANCE FOR REPLACEABLE NON-PRESSURE PARTS IS REQUIRED.

13- THE LOCATION AND MINIMUM SIZE OF ATTACHMENT WELD FROM NOZZELS AND OTHER CONNECTIONS SHALL CONFORM TO REQUIREMENTS DEFINED IN THE APPLICABLE CODES AND ANY NECESSARY CORROSION ALLOWANCE FOR THE ABOVE ATTACHMENTS SHALL GENERALLY CONFORM TO THE APPLICABLE PARTS OF ABOVE SAME CODE.

14- OPENING IN SHELL AND HEAD SHALL BE STUDIED IN ACCORDANCE WITH THE APPLICABLE CODE AND SHALL BE ADEQUATE FOR PRESSURE AND TEMPERATURE TO BE STAMPED ON THE VESSEL . VESSELS CORRODED THICKNESS IN EXCESS OF THE REQUIRED DESIGN OR MINIMUM CODE THICKNESS SHALL NOT BE CONSIDERED IN THE DESIGN OF OPENING REINFORCEMENT UNDER OPERATING CONDITIONS. EACH REINFORCEMENT PAD OR SEGMENT SHALL BE PROVIDED WITH A¼" " UNC" TEL TALE HOLE .

15- VESSELS SHALL BE EQUIPPED WITH PROPER FACILITIES FOR THE PURPOSE OF HAVING ACCESS TO INTERNAL OF VESSEL FOR THOROUGH INSPECTION.

16- BY-PASS ODORIZER SHALL BE SELF SUPPORTING BY MEANS OF EITHER SKID OR LEGS WHICHEVER IS MOST SUITABLE FOR THIS PURPOSE.

17- TYPE 316 SEAMLESS STAINLESS STEEL TUBING SHALL BE USED.

18- EACH ODORANT TANK SHALL BE EQUIPPED WITH APPROPRIATE LEVEL GAUGE ASSEMBLY . GAUGE GLASS SHALL REMAIN CLEAR, READABLE AND NOT BE STAINED AGAINST ODORANT EFFECTS AND SUN RAY AND BE EQUIPPED WITH A PROTECTION GUARD.

19- THE DIFFERENTIAL PRESSURE INDICATOR SHOULD BE PROVIDED FOR SETTING OF THE RIGHT DIFFERENTIAL PRESSURE, ACROSS BUTTERFLY VALVE.

20- ODORIZER TANKS SHALL BE SIZED FOR MAXIMUM FLOW AND THREE MONTHS CONTINUOUS OPERATION (TANK WILL BE REFILLED EVERY THREE MONTHS).

FABRICATION WELDING

1- ALL WELDS SHALL BE MADE BY SHIELDED METAL ARC PROCESS OR AUTOMATIC AND SEMI AUTOMATIC WELD USING ELECTRODES OF A COMPOSITION AND QUALITY COMPATIBLE WITH THE VESSEL MATERIALS IN ACCORDANCE WITH APPROPRIATE APPLICABLE CODE.

2- THE SUPPLIER SHALL SPECIFY THE MAKE AND QUALITY OF THE ELECTROEDS WHICH HE PROPOSES TO UTILIZE IN FABRICATION.

ALL WELDERS SHALL BE QUALIFIED UNDER SECTION IX OF THE ASME CODE. WORK INVOLVING WELDING SHALL NOT BE SUBJECT TO ANY OTHER CODES WITHOUT THE PRIOR APPROVAL OF PURCHASER.

3- ALL NOZZLES , MANHOLES AND SMALL CONNECTIONS AND THEIR REINFORCEMENTS SHALL BE ATTACHED TO THE VESSEL WITH FULL PENETRATION WELDS.

4- CIRCUMFERENTIAL WELDS SHALL BE SO LOCATED THAT VESSEL INSPECTION CAN BE MADE WITH ALL INTERNAL EQUIPMENT IN PLACE.

HEAT TREATMENT

1- HEAT TREATMENT INCLUDING PRE OR POST-WELD HEAT TREATMENT OF VESSELS SHALL BE IN ACCORDANCE WITH ASME PRESSURE VESSEL CODE, SECTION VIII, DIV .I.

2- ALL FLANGED FACINGS AND THREADED CONNECTIONS MUST BE ADEQUATLY PROTECTED AGAINT OXIDIZATION DURING THE HEAT TREATMENT.

3- IF THE VESSEL IS POST – WELD HEAT TREATED , NO WELDING IS PERMITTED AFTER STRESS RELIEVING.

ODORANT

THE ODORANT TO BE USED IS TETRAHYDROTHIOPHEN (C4H8S) OR MERCAPTAN.

1- THE RATE OF ODORIZING FOR T.H.T IS BETWEEN 15 TO 25 MG. PER STANDARD CUBIC METER.

2- THE RATE OF ODORIZING FOR MERCAPTAN IS BETWEEN 10 TO 20 MG. PER STANDARD CUBIC METER. THE COMPOSITION OF MERCAPTAN IS AS FOLLOWS:

- ISOPROPYLE MERCAPTAN	**80% APPROX.**
- N- PROPYLE MERCAPTAN	**10% MAX.**
- TERTIARY BUTYL MERCAPTAN	**10% APPROX.**

INSPECTION

1- THE PURCHASER RESERVES THE RIGHT OF INSPECTION MANDATORY.

INSPECTION SHALL BE CARRIED OUT TO MEET THE REQUIREMENTS OF ASME CODE SECTION VIII , DIVISION I.

2- IN ADDITION TO ANY MANDATORY CODE INSPECTIONS REQUIRED , ALL MATERIALS AND FABRICATION SHALL BE SUBJECT TO INSPECTION BY THE PURCHASER SO DESIRED.

3- PRIOR TO FINAL INSPECTION ALL SLAG , LOOSE SCALE , DIRT , GRIT , WELD SPATTER , PRINT , OIL AND OTHER FOREIGN MATTER SHALL BE THOROUGHLY REMOVED SO THAT INSPECTION MAY BE CARRIED OUT TO THE BEST ADVANTAGE.

4- ALL MANHOLE COVER MUST BE IN PLACE BEFORE THE VESSEL IS TESTED.

5- ANY DEFECTS SHALL BE REPAIRED AND THE REPATRED WELD SHALL BE REHEAT TREATED IF ORIGINALY REQUIRED , AND RE-EXAMINED BY THE PRESCRIBED METHOD FOR FREEDOM FROM DEFECTS. IF CORRECTION IS REQUIRED AND INVOLVES SERIOUS ALTERATION, THE WRITTEN APPROVAL OF THE PURCHASER SHALL BE OBTAINED BEFORE PROCEEDING WITH SUCH CORRECTION.

6- PIPE DOPE RESISTANCE TO THE ODORANT SHOULD BE APPLIED AFTER CLEANING OIL FROM THREAD.

7- THE SUPPLIER SHALL GIVE ADEQUATE NOTICE TO THE PURCHASER PRIOR TO ALL INSPECTION TEST VISITS REQUIRED BY THE SPECIFICATION AND DESIGN CODES.

8- WHERE THE PURCHASER DESIRES TO VISIT THE WORKS TO INSPECT THE WORK OR WITNESS TEST , ADEQUATE NOTICE SHALL BE GIVEN TO THE SUPPLIER.

9- THE SUPPLIER SHALL ALLOW FREE ACCESS TO THE PURCHASER TO ALL PARTS OF HIS OR HIS SUBCONTRACTORS WORKS, FOR THE PURPOSE OF CARRYING OUT ANY INSPECTION OR WITNESSING CONSTRUCTION , TEST , ETC.

TESTING

1- VESSELS SHALL BE TESTED IN ACCORDANCE WITH THE ASME CODES, RULES OR REGULATIONS.

2- ALL WELDED ATTACHMENTS PROVIDED WITH " TELL – TALE " HOLES SHALL BE TESTED BY PNEUMATIC PRESSURE PRIOR TO THE NORMAL STRESS RELIEF AND FINAL HYDROSTATIC TEST.

3- ALL TEST CERTIFICATES MUST BEAR THE PURCHASERS NAME AND ORDER NUMBER WHETHER THEY EMINATE DIRECTLY FROM THE MAIN SUPPLIER OR A SUBCONTRACTOR.

4- TEST CERTIFICATE MUST BE APPROVED BY THE PURCHASER BEFORE DESPATCH INSTRUCTION ARE GIVEN.

5- RADIOGRAPHIC EXAMINATION SHALL BE PERFORMED.

PAINTING

SURFACE PREPARTION SHALL BE IN ACCORDANCE WITH SWEDISH STANDARD STS 055900 GRADE SA3 , OUTSIDE COATING SHALL BE ZINC SILICATE WITH A TOTAL DRY FILM THICKNESS OF 150 MICRONS.

MARKING

1- EACH ODORIZER SHALL BE IDENTIFIED BY PERMANENTLY ATTACHED CORROSION RESISTANT NAMEPLATE. NAMEPLATE SHALL BE LOCATED SO THAT IT IS EASILY VISIBLE AFTER INSTALLATION.

2- ODORIZER SHALL HAVE NAMEPLATE CONTAINING MARKING AND STAMPING IN ACCORDANCE WITH THE ASME PRESSURE VESSEL CODE PLUS THE ADDITIONAL INFORMATION AS FOLLOWS.

- **MANUFACTURER NAME**
- **YEAR BUILT**
- **SERIAL NUMBER**
- **DESIGN PRESSURE**
- **DESIGN TEMPERATURE**
- **RELIEF VALVE SET PRESSURE (KG/CM^2)**
- **HYDROSTATIC TEST PRESSURE**
- **TANK CAPACITY (LITER)**
- **TANK WEIGHT (KG)**
- **N.I.G.C . PURCHASE ORDER AND ITEM NO.**

PACKING

FOR EACH ODORIZER , PACKING SHALL BE IN ACCORDANCE WITH N.I.G.C PROTECTION , PACKING , MARKING AND DISPATCHING INSTRUCTIONS.

SHIPMENT

1- PRIOR TO SHIPMENT , THE VESSEL SHALL BE THOROUGHLY CLEANED AND ALL WATER, DIRT , SAND , WELD METAL SPATTER AND OTHER FOREIGN MATTERS SHALL BE REMOVED.

2- ALL TESTING LIQUIDS SHALL BE REMOVED AND NUITS BE ORIED BEFORE PACKING.

3- ALL FLANGED OPENINGS SHALL BE PROPERLY PROTECTED WITH SUITABLE STEEL COVERS , TAPPED OPENINGS SHALL BE PROTECTED WITH THREADED STEEL PLUGS SCREWED IN.

4- BEFORE SHIPMENT IS MADE , THE PURCHASER'S WRITTEN APPROVAL OF THE PROPOSED METHOD OF SHIPMENT MUST BE OBTAINED.

5- RELEASE NOTES SHALL BE ISSUED BY THE PURCHASER FOR SUCH VESSEL AFTER FINAL INSPECTION AND TESTING AT THE WORKS AND VESSELS SHALL NOT BE DESPATCHED UNTIL SUCH RELEASE NOTES HAVE BEEN ISSUED.

DRAWINGS & DATA

THE FOLLOWING DRAWINGS AND DATA SHALL BE FURNISHED TO THE PURCHASER AT QUOTATION AND ORDERING STAGE:

A: AT QUOTATION STAGE

1- GENERAL ARRANGEMENT DRAWINGS SHOWING OUTLINE DIMENSIONS AND WEIGHTS.

2- COMPLETE SPECIFICATION AND ORIGINAL CATALOGUES OF ALL INSTRUMENTS AND VALVES.

3- LIST OF RECOMMENDED SPARE WITH UNIT PRICES TO COVER INITIAL COMMINSSIONING AND TWO YEARS OPERATION.

B. AT ORDERING STAGE AND PRIOR TO MANUFACTURING

1- DESCRIPTIVE FINAL ARRANGEMENT AND DETAIL DRAWINGS (TRANSPARENC) AND CALCULATION.

2- COMPREHENSIVE CATALOGUES AND TECHNICAL DATA OF THE SUPPLIED INSTURMENTS .

3- OPERATING AND INSTALLATION INSTRUCTIONS.

4- MAINTENANCE MANUAL(S)

GUARANTEE

1- MANUFACTURER SHALL GUARANTEE THE COMPLIANCE OF MATERIAL AND PERFORMANCE OF THE SUPPLIED EQUIPMENTS WITH THIS SPECIFICATION.

2- THE PERIOD OF GUARANTEE SHALL BE ONE YEAR AFTER EQUIPMENT GOES ON REAM OR EIGHTEEN MONTHES AFTER DATE OF HSIPMENT , WHICHEVER OCCURS FIRST.

3- SUPPLIER SHALL AGREE TO REPAIR OR REPLACE ANY EQUIPMENT WHICH PROVES TO BE DEFECTIVE DURING THE ABOVE MENTIONED PERIOD.

APPENDIX "A"

SITE LOCATIONS AND CLIMATIC CONDITIONS

AMBIENT CONDITIONS

MAX AMBIENT TEMP.	**50°C**
MIN AMBIENT TEMP.	**-30°C**
MAX SUN TEMP	**80°C**
MAX RELATIVE HUMIDITY	**85%**
MAX WIND VELOCITY	**120 KM/H**
TOTAL ANNUAL RAINFALL	**1100 MM**
MAX RAINFALL IN A DAY	**75 MM**

APPENDIX "C"

ODORANT LOADER SPECIFICATION

1- OPERATING METHOD AND DESCRIPTION

ODORIZING AGENTS USED FOR GAS ODORIZATION ARE OFTENLY SUPPLIED IN 200 L STANDARD BARRELS. DUE TO THE FACT THAT THE ODORIZING AGENT HAS A CHARACTERISTIC PENETRANT SMELL , IT IS NECESSARY TO FILL THE LIQUID INTO THE ODORIZER TANK BY A SPECIAL DEVICE WHICH PREVENTS POLLUTION.

ODORANT LOADER IS CONSISTING OF:

- **A PRESSURE SUPPLY UNIT**
- **A SEPARATE LANCE THROUGH WHICH THE ODORANT IS DISCHARGED**

1.1- PRESSURE SUPPLY UNIT

THE PRESSURE SUPPLY UNIT NECESSARY TO LOAD THE BARREL WITH A SLIDE OVERPRESSURE. THIS UNIT IS CONSISTING OF :

- **A RAPID COUPLING (POS 6)**
- **A FILTER (POS 5)**
- **A PRESSURE CONTROLLER (POS 4)**
- **A BACK PRESSURE VALVE (POS 3)**
- **FULL CAPACITY SAFETY RELIEF VALVE (POS 2)**
- **MANUAL SHUT – OFF VALVE (POS 1)**
- **PRESSURE GAUGE (POS 9)**
- **ST.ST . OR PTFE FLEXIBLE TUBE (POS 10)**

THE RAPID COUPLING CAN BE CONNECTED TO A SUITABLE SOURCE OF PRESSURIZED GAS. THE GAS IS PSSING THE PRESSURE CONTROLLER , WHERE IT IS REDUCED TO A PRESSURE OF MAX. 0.25 BAR. THE OPENING PRESSURE OF THE SAFETY RELIEF VALVE IS 0.25

BAR AND PROTECTS THE BARREL AGAINST NON PERMITTED OVERPRESSURE. THE GAS PRESSURE CAN BE INTERRUPTED BY THE BULLT IN SHUT – OFF VALVE.

1.2- LANCE

THE LANCE, WHICH MUST BE SEPARATELY INSTALLED IN THE 200 L BARREL IS CONSISTING OF:

- **A PIPE WITH 2 INCH THREAD CONNECTION**
- **A SHUT – OFF VALVE (POS 8)**
- **A BUILT – IN BACK PRESSURE VALVE (POS 8)**
- **A RAPID COUPLING WITH A 5 METER PTFE FLEXIBLE TUBE.**

THE BUILT – IN BACK PRESSURE VALVE PROTECTS THE BARREL AGAINST WRONG OPERATING PROCEDURE.

APPENDIX "D"

BY- PASS ODORIZER

DATA SHEET

1/ MAX & MIN LINE PRESSURE …… KG/CM² …… PSIA

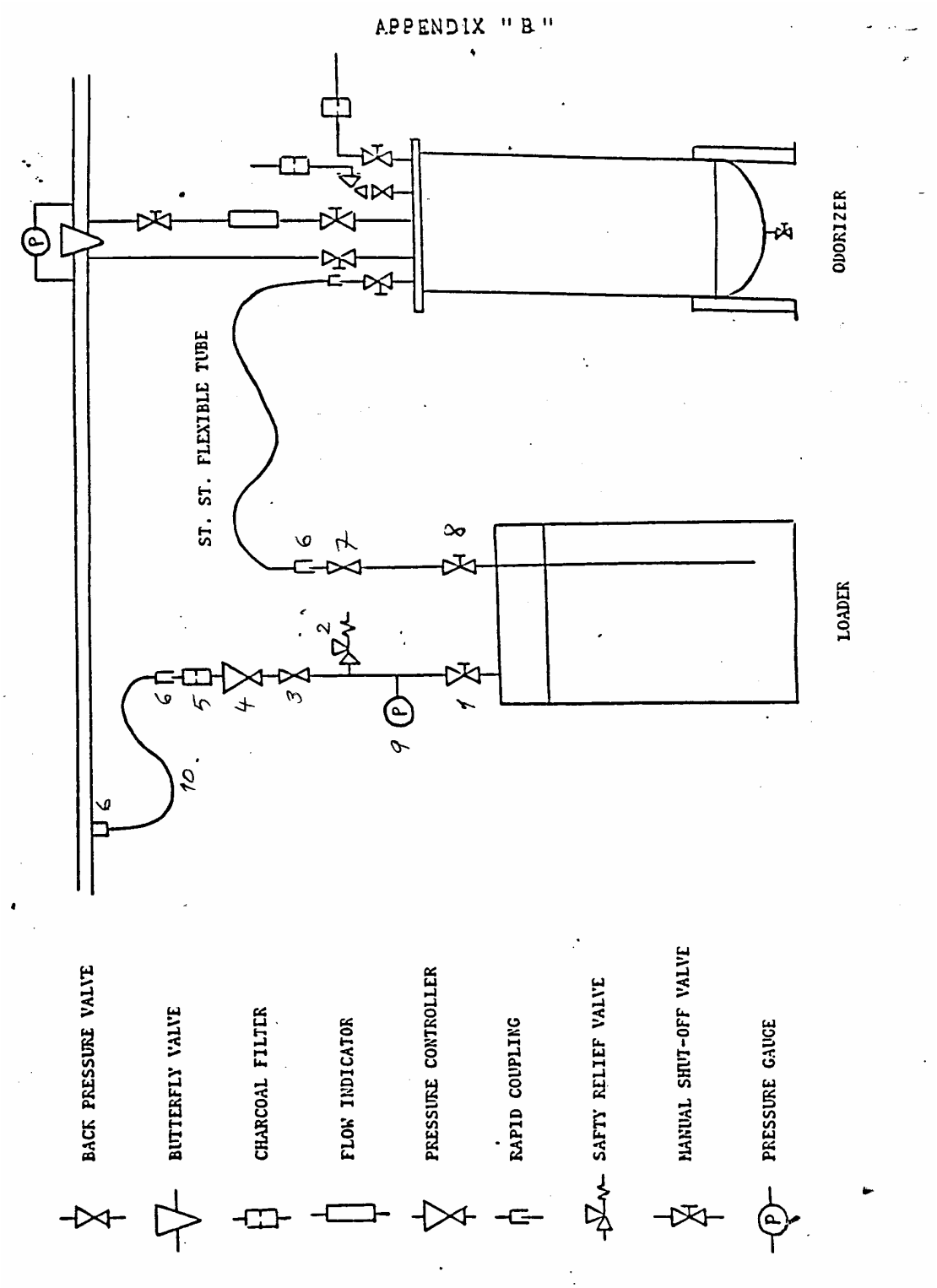
2/ MAX & MIN GAS TEMP ……°C

3/ MAX GAS FLOW …… SCMH

4/ TANK CAPACITY ……LITER

5/ RELIEF VALVE SET PRESSURE …… KG/CM² …… PSIA

APPENDIX "B"


ODORIZER
ST. ST. FLEXIBLE TUBE
LOADER
BACK PRESSURE VALVE
BUTTERFLY VALVE
CHARCOAL FILTER
FLOW INDICATOR
PRESSURE CONTROLLER
RAPID COUPLING
SAFTY RELIEF VALVE
MANUAL SHUT-OFF VALVE
PRESSURE GAUGE