IGS-IN-201(2)

2002

61

شرکت ملی گاز ایران

National Iranian Gas Co.

مدیریت پژوهش وفنآوری

Research and Technology Management

امور تدوین استانداردها

Standardization Division

IGS

Iranian Gas Standards

Specification for :

مشخصات فنی :

GAS PRESSURE REGULATORS,DOMESTIC

رگولاتورگازازنوع خانگی

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)

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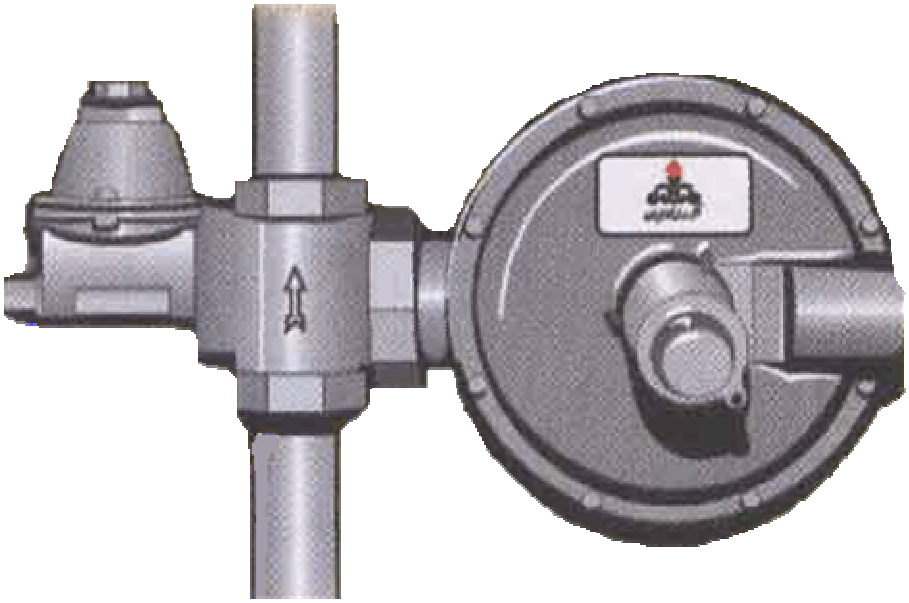

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1. SCOPE

THIS SPECIFICATION COVERS THE MINIMUM DESIGN . MATERIAL FABRICATION . TESTING . MARKING AND PACKING REQUIREMENTS OF DOMESTIC & COMMERCIAL GAS PRESSURE REGULATORS WITH INLET PRESSURE 1.03 – 4.14 BAR (15 – 60 PAIG) . OUTLET PRESSURE RANGE 15 – 23.7 MBAR (6 – 9.5 IN.W.C) . SIZES ¾ TO 1½ INCHES AND CAPACITIES FROM 2.5 TO 160 SCM/H. FOR SPECIFIC REQUIREMENTS SEE APPENDIX "B" .

IN CASE OF ANY EXCEPTION TO THIS SPECIFICATION . IT SHALL BE CLEARLY STATED ON THE TECHNICAL QUOTATION SUBMITTED BY SUPPLIER .

2. GENERAL REQUIREMENTS

SUPPLIER IS REQUIRED TO FILL COMPLETELY AND SIGN THE ATTACHED DATA SHEET AND SUBMIT SAMPLES IN QUANTITIES NEEDED FOR EACH REGULATOR AGAINST EACH INDIVIDUAL ITEM OF INQUIRY IN THE PROCESS OF TECHNICAL EVALUATION AS WELL AS 2 SETS OF THE FOLLOWING DOCUMENTATION IN ENGLISH WITH TECHNICAL QUOTATIONS .

2.1 ALL TECHNICAL INFORMATION SUCH AS MATERIAL SPECIFICATIONS AND STANDARDS , REGULATOR PERFORMANCE DATA AND ORIGINAL PRINTED CATALOGUE (S) .

2.2 COMPLETE PARTS LIST CATALOGUE (S) .

2.3 GENERAL DRAWING (S) SHOWING OUTLINE DIMENSIONS .

2.4 MANUALS FOR INSTALLATION , COMMISSIONING , OPERATION AND MAINTENANCE .

NOTE : IN CASE OF ORDER PLACEMENT , THE SUPPLIER SHALL SUBMIT 10 SETS OF ABOVE INFORMATION (ITEMS 21

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TO 2.4) FOR EACH 5000 NUMBERS OF REGULATORS (MINIMUM 10 SETS) .

3. DESIGN & SERVICE CONDITIONS :

THE REGULATOR SHALL HAVE EASY MOVING PARTS WITHOUT STRESSES AND BE CONSTRUCTED OF QUALITY MATERIALS IN A WORKMANLIKE MANNER IN ORDER TO ATTAIN GAS TIGHTNESS , STABILITY OF PERFORMANCE AND SUSTAINED ACCURATE REGULATION OVER A PERIOD OF TIME AND OVER THE RANGE OF OPERATING CONDITIONS WITH MINIMUM OF MAINTENANCE , WHEN REGULATING NATURAL GAS SUCH REGULATOR SHALL HAVE THE GENERAL CHARACTERISTICS LISTED BELOW :

3.1- THE REGULATOR SHALL BE FOR OUTDOOR INSTALLATION AND ALL ITS PARTS SHALL BE RESISTANT TO ATMOSPHERIC CORROSION AS WELL AS THE CONTINUOUS ATTACK OF ODORIZED NATURAL GAS & METHANOL .

3.2- THE INLET PRESSURE 1.03 – 4.14 BAR (15 – 60 PSIG) , OUTLET PRESSURE RANGE 15 – 23.7 MBAR (6-9.5 IN.W.C) SET AT 17.5 ± 0.7 MBAR (7 ± 0.3 IN.W.C) AT A FLOW RATE AS PER APPENDIX " A " .

3.3- THE AMBIENT TEMPERATURE RANGE FOR THE REGULATOR -29 TO 60 DEG.C (-20 TO 140 DEG.F) .

3.4- STANDARD VOLUME MEASURED AT 1.013 BAR (14.696 PSIA) AND 15.6 DEG.C (60 DEG.F) .

3.5- REGULATOR PERFORMANCE SHALL COMPLY WITH THE FOLLOWING :

REGULATOR OUTLET PRESSURE SET AT 17.5± 0.7 MBAR (7± 0.3 IN.W.C) AT THE SPECIFIED FLOW RATE ACC. TO APPENDIX " A" AND 1.03 BAR (15PSIG) INLET PRESSURE .

THE OUTLET PRESSURE OF REGULATOR SHALL NOT RISE ABOVE 23.7 MBAR (9.5 IN.W.C) OR FALL BELOW 15 MBAR (6 IN.W.C) WITH FLOW VARIATION BETWEEN ZERO AND FULL

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CAPACITY OF REGULATOR AT 1.03 AND 4.2 BAR (15 AND 60 PSIG) INLET PRESSURES .

3.6 THE REGULATOR SHALL BE EQUIPPED WITH LOW PRESSURE SHUT OFF DEVICE (L.P.S.O) , HIGH PRESSURE SHUT OFF DEVICE (H.P.S.O) & FULL CAPACITY INTERNAL RELIEF VALVE (F.I.R.V) . THE THREE SAFETY DEVICES AND THE REGULATOR ITSELF SHALL BE ASSEMBLED TOGETHER AND COMPRISE ONE UNIT ONLY .

3.7 THE SETTING OF THE HIGH PRESSURE SHUT OFF DEVICE (H.P.S.O) AND FULL CAPACITY INTERNAL RELIEF VALVE (F.I.R.V) SHALL BE ADJUSTABLE AND THEIR ADJUSTMENTS SHALL BE READILY ACCESSIBLE FOR EASE OF ADJUSTMENT . HIGH PRESSURE SHUT OFF DEVICE (H.P.S.O) SHALL BE INDEPENDENT OF THE MAIN DIAPHRAGM CASE AND VALVE SEAT OF THE REGULATOR .

BOTH HIGH & LOW PRESSURE DEVICES SHALL BE RESETABLE MANUALLY . THE LOW PRESSURE SHUT OFF DEVICE (L.P.S.O) SHALL NOT COME AUTOMATICALLY INTO THE SERVICE WHEN THE OUTLET PRESSURE REACHES BELOW 25 MBAR (10 IN.W.C) .

3.8 THE SETTING RANGES OF THE THREE SAFETY DEVICES OF THE REGULATOR SHALL BE AS FOLLOWING :

3.8.1- LOW PRESSURE SHUT OFF (L.P.S.O) SETTING 8.7± 1.2 MBAR (3.5± 0.5 IN.W.C) .

3.8.2- HIGH PRESSURE SHUT OFF (H.P.S.O) SETTING 42.3± 2.5 MBAR (17± 1 IN.W.C) .

3.8.3- FULL INTERNAL RELIEF VALVE (F.I.R.V) SETTING 62.3± 7.5 MBAR (25 ± 3 IN.W.C) .

3.9 FULL INTERNAL RELIEF VALVE (F.I.R.V) SHALL BE DESIGNED IN SUCH AWAY THAT IN CASE OF FAILURE OF ANY INTERNAL PARTS OF REGULATOR , IT SHALL BE ABLE TO DISCHARGE

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THROUGH FLOW AT 4.2 BAR (60 PSIG) INLET PRESSURE WITHOUT INCREASING OUTLET PRESSURE OF REGULATOR ABOVE 106 MBAR .

3.10 THE INLET AND OUTLET CONNECTIONS OF REGULATOR SHALL BE IN-LINE . DIRECTION OF FLOW SHALL BE PERMANENTLY EMBOSSED ON THE VALVE BODY .

3.11 ALL INLET , OUTLET AND VENT CONNECTIONS SHALL BE THREADED N.P.T , FEMALE ACC. TO ANDI B 1.20.1 .

3.12 VENT SHALL BE LOCATED ON THE TOP COVER OF THE DIAPHRAGM CASE AT FARTHEST POINT WITH RESPECT TO THE VALVE BODY AND EMBOSSED " VENT " PERMANENTLY . VENT SIZE SHALL BE ETTHER ½ , ¾ , 1 , 1½ OR 2 INCH AND SUITABLE FOR RELIEVING FULL FLOW OF REGULATOR VENT SHALL BE PROVIDED WITH A SECURED REPLACEABLE BUG SCREEN .

3.13 THE VALVE LINKAGE SHALL BE SOLID TYPE , PIVOT PINS OR RIVETS SO DESIGNED THAT THEY CAN NOT WORKLOOSE IN THE ASSEMBLED REGULATOR .

3.14 THE VALVE ORIFICE SHALL NOT BE VARIABLE TYPE , THE VALVE ORIFICE THREAD SHALL BE GAS TIGHT AND ORIFICE SHALL BE ACCESSIBLE BY REMOVING DIAPHRAGM CASE FROM BODY AND SHALL BE EASILY REMOVABLE WITHOUT REQUIRED SPECIAL TOOLS .

3.15 THE VALVE DISC SHALL BE SO MOUNTED SUCH THAT IT WILL ALIGN FOR COMPLETE CONTACT WITH THE SEATING SURFACE OF THE VALVE ORIFICE THE VALVE DISC SHALL BE SECURELY FASTENED TO ITS ACTUATOR SO THAT IT CAN NOT BECOME SEPARATED DURING SHIPPING , HANDLING OR OPERATION .

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