Residential Diaphragm Gas Meter

– DAESUNG G-Series Diaphragm Gas Meter

(G1.6 / G2.5 / G4R)

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1. Profile

1.1 Introduction

We, DAESUNG MEASURING Co., Ltd. are pleased to introduce ourselves to your esteemed company as the leading supplier of various Gas Meter, Regulator and other Gas Equipment. Founded in 1987, we have steadily grown in Energy and Measuring equipment business while doing our part in the development of technology and services for this sectors to promote welfare of our customers.

We have been concentrating our best efforts in development of new products for the best value for customers by providing the best-in class technology of the products and systems while organizing the measuring research institute and operating international Gas Meter Calibration Center to establish the foundation for being a world-class enterprise outstanding in our devotion to promote the worldwide recognition of our products by cooperating with other energy supplying companies in Asia, North Europe and South America regions. Especially the Residential Gas Meter, we are expanding our supplies worldwide with worldwide best recognition and competitiveness.

We have been exporting our products for 10 years and now we are desirous of starting business with your certificated company.

A) President : Mr. Chang Hyun Park

B) ESTABLISHED : DEC. 30. 1987

C) Finance : Total asset ₩11,515,000,000 (2009 year)

Capital ₩ 2,000,000,000

Annual Sales ₩30,500,000,000

D) ITEMS : ☞ Gas Meter (G1.6, G2.5, G4R), Remote Reading G/M, AMR System G/M

☞ Heat Meter (DSH-1.5, 2.5, 3.5, 4.5)

(DSF- 1.5, 2.5, 3.5, 4.5)

☞ Industrial Gas Meter, Regulator, Refill Can & System

☞ Water Heater, Boiler, Gas Circuit Breaker, LPG/LNG Supply System, VRS Free

E) Quality Certification

☞ KS : Gas Meter ▶ NO. 8186

☞ ISO : ISO 9001, KS A 9001, EN ISO9001

☞ OIML R31 Certificate

F) Customers : KOGAS

City Gas Companies etc.

Construction Companies

Distribution Agents

Gas Installation Companies

1.2 History

▶ 1985. 12. 04 JOINT VENTURE BETWEEN DAESUNG & SCHLUMBERGER

▶ 1987. 12. 30 ESTABLISHED DAESUNG MEASURING CO.,LTD.

▶ 1990. 11. 02 ACQUIRED EXPORT LICENCE

▶ 1992. 09. 26 ACQUIRED KOREAN STANDARD (DSG-2,3,5 : G/M NEW MODEL)

▶ 1994. 04. 20 ENTER INTO PRODUCTION CAPACITY OF 25,000EA/MONTH

▶ 1994. 12. 20 BREAK 400,000EA/YEAR OF PRODUCTION CAPACITY (DSG SERIES)

▶ 1995. 10. 01 PROMOTE DSG GAS METER FOR EXPORTING
(MID-SOUTH AMERICAN AREA)

▶ 1995. 10. 05 ACQUIRED ISO 9001 (GAS METER)

▶ 1995. 10 EXPORT DSG-2(G1.6) TO UKRAINE

▶ 1995. 12. 20 BREAK 700,000EA/YEAR OF PRODUCTION CAPACITY (DSG SERIES)

▶ 1996. 07 EXPORT DSG-2(G1.6) TO CHILE

▶ 1996. 12 EXPORT DSG-3 TO CHILE

▶ 1997. 03 EXPORT DSG-3 TO CHILE

▶ 1997. 07 START TO MANUFACTURE REMOTE READING GAS METER

▶ 1997. 10 EXPORT DSG-3 TO CHILE

▶ 1998. 05 START TO EXPORT DSG-2(G1.6) AND DSG-5(G4R) TO INDONESIA

▶ 1998. 09. 29 ACQUIRED KOREAN STANDARD
(DSH-1.5, 2.5, 3.5, 4.5 : H/M NEW MODEL)

▶ 1998. 11. 14 OPEN INTERNET HOMPAGE (address : http://www.dsmeters.co.kr)

▶ 1999. 04. 16 START TO MANUFACTURE DSR-3 OPCO (HOUSE REGULATOR)

▶ 1999. 08. 30 ACQUIRED KOREAN STANDARD FOR DSG-4 (G/M NEW MODEL)

▶ 2000. 08 START TO EXPORT DSG-3 TO TAIWAN

▶ 2001. 09 START TO EXPORT DSG-3 TO COLOMBIA

▶ 2002. 05. 02 ACQUIRED CERTIFICATE OF ACCREDITATION OF CALIBRATION LABORATORY

▶ 2002. 11 ACHIEVED EXPORTING GAS METERS OVER U$ 300MIL (2001. 07 ~ 2002. 06)

▶ 2002. 12. 29 WON TRADE PRIZE ($ 3MILLION EXPORT TOWER)

▶ 2003. 11. 29 WON TRADE PRIZE ($ 5MILLION EXPORT TOWER)

▶ 2004. 06. 30 ACQUIRED KOREAN O.I.M.L (DSF(MD)-1.5, 2.5, 3.5 : DSF(SD)-1.5, 2.5)

▶ 2004. 07. 27 ACQUIRED KOREAN O.I.M.L (DSW(MD)-1.5, 2.5, 3.5 : DSW(SD)-1.5, 2.5, 3.5)

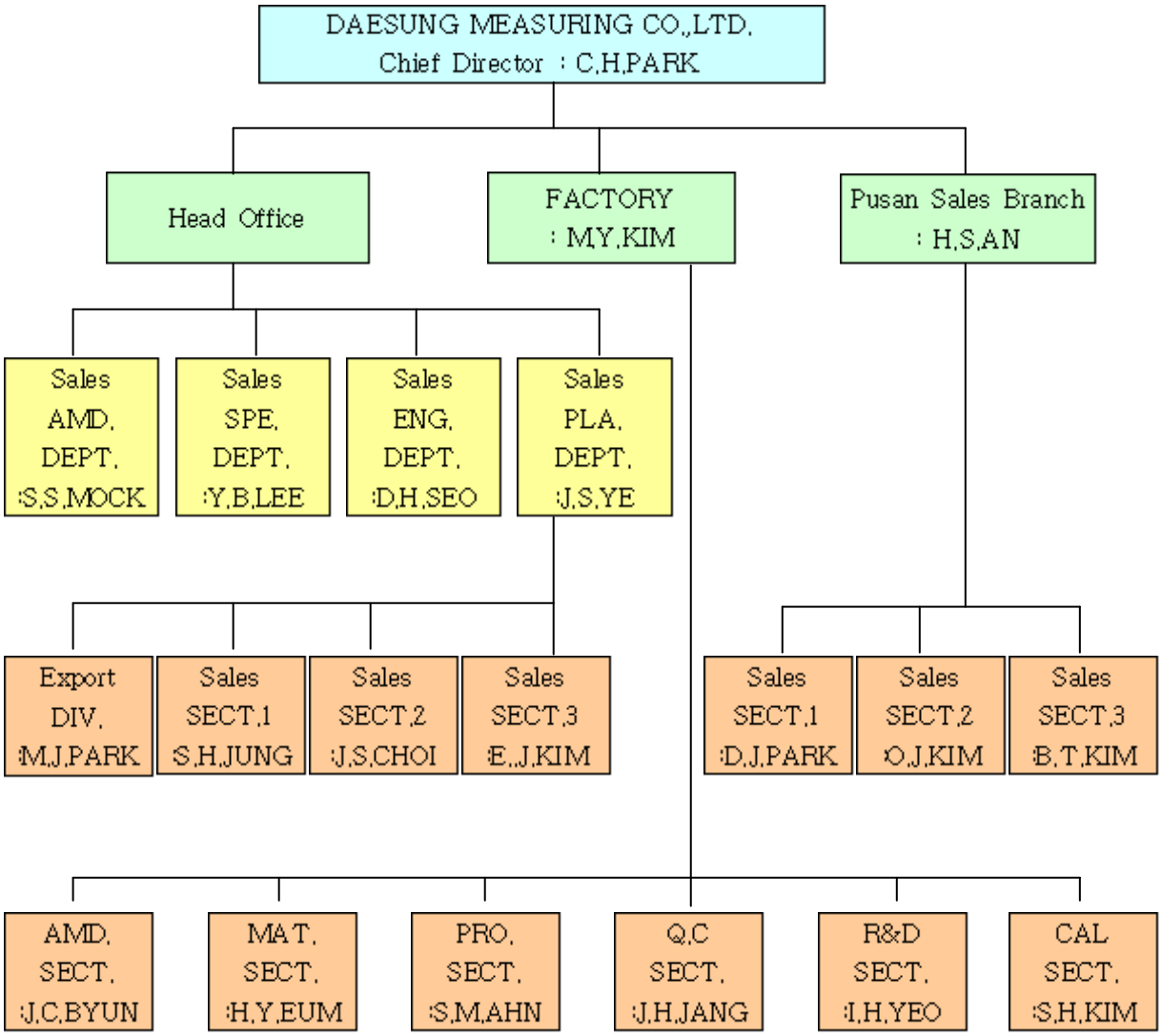
▶ 2004. 11. 03 WON PRIZE FROM KOREAN MOCIE MINISTER (DEVELOPMENT SONIC NOZZLE BENCH)

▶ 2004. 11. 15 ACQUIRED KOREAN O.I.M.L

▶ 2005. 11. 30 ACQUIRED NETHERLANDS O.I.M.L

▶ 2008. 04 START TO EXPORT TO BOLIVIA, BRAZIL AND ARGENTINE

1.3 Human Resource & Organization Diagram



Description	Head Office	Factory	Pusan Branch	SUM
Staff	36	20	7	63
Laborers	2	30	0	32
Total	38	50	7	95

1.4 Address & Location & Map

▶ Head Office : #599-3, Gyeongtan-Ri, Hogye-Myeon, Mungyeong-Si,
& Gyeongsangbuk-Do, 745-812, Korea
Factory TEL)+82-54-550-2500 FAX)+82-54-553-0761
Homepage (http://www.dsmeters.co.kr)

2. Product Information

2.1 Feature

▶ DAESUNG G-Series gas meter covers the sizes of domestic, commercial meters with flow rate from 2.5 ㎥/h to 6.0 ㎥/h. The products, producing in our company, are suitable for LNG, LPG, precision, excellent metering performance, sturdiness and compact size are some of the outstanding features of these products.

▶ As for the structure, the meters have a two measuring units with four measuring chambers each, which are linked together. The measuring chambers are separated by synthetic diaphragm.

The chambers are filled and emptied periodically, and the movement of the diaphragm is transferred as via a gear to the crank lever.

This moves the valves which control the gas flow and revolution of the crank levers are transferred via driving drum into the indicating device.

▶ Our products, innovative production plant has been designed in accordance with KSA9001,ISO9001 Quality management system to ensure the highest quality at full production capacity. Moreover, we have been developing the products to satisfy the requirement specified in OIML standard.

2.2 Technical Characteristics

▶ G-Series :DAESUNG GAS Meter is produced according to the recommendation of O.I.M.L Standard.

▶ Durability : The newest engineering plastics ensures its persistence.

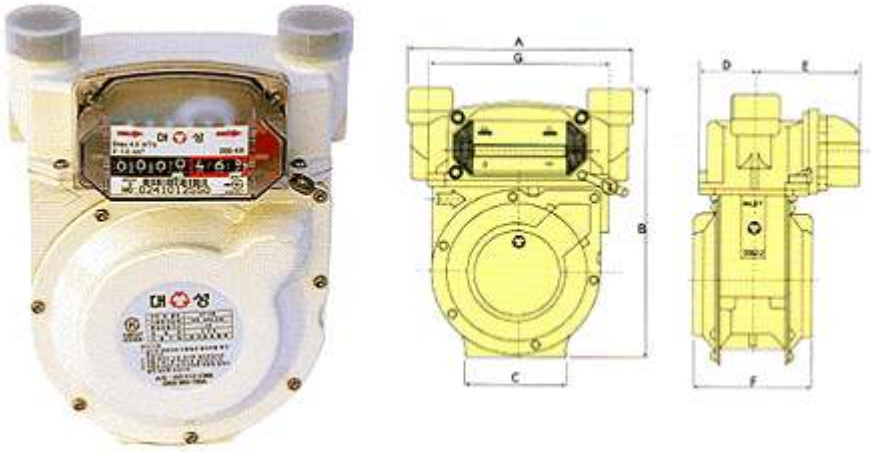
▶ Rotary riveting : Use of the riveting methods for connecting distribution lever with a connecting rod.

▶ G-Series has function of measuring minute flow rate and indicates the stable measuring typical accuracy curve in a range of minimum through maximum flow rate.

2.3 Technical Specification

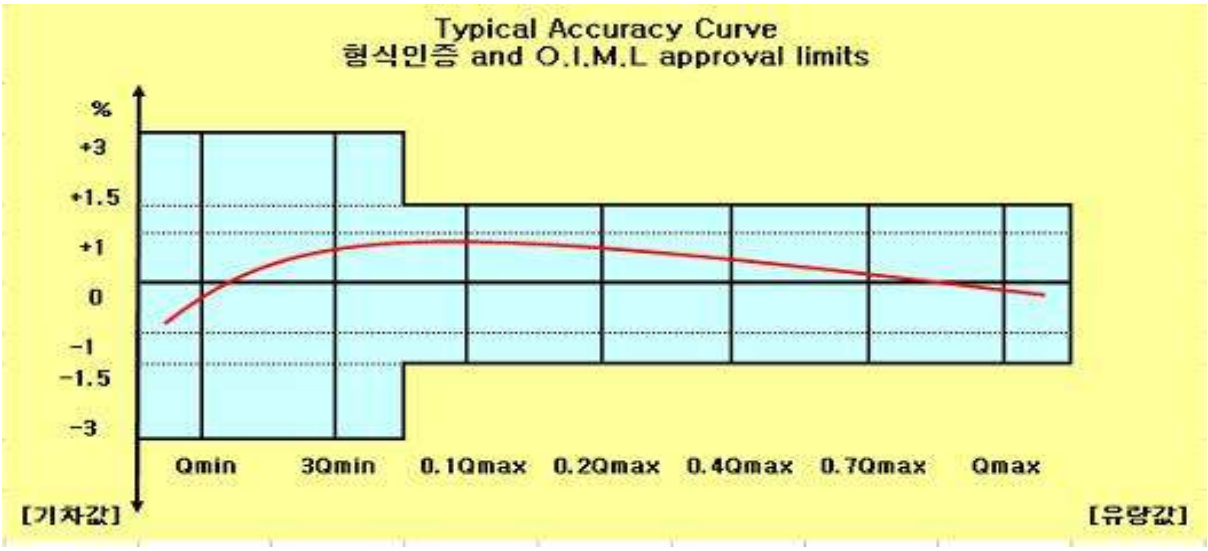
Class	Unit	Model Series		
		G1.6	G2.5	G4R
Type		Diaphragm Gas Meter		
Case Material		Aluminum Die Casting		
Flow Direction		Option (Left Type or Right Type)		
Cyclic Volume	d ㎥	0.7	1.2	1.7
Maximum Flowrate	㎥/h	2.5	4.0	6.0
Minimum Flowrate	㎥/h	0.016	0.025	0.04
Maximum Working Pressure	bar	0.5	1.5	1.5
Qmin≤Q＜0.1Qmax	%	± 3 %		
0.1Qmax≤Q≤Qmax		± 1.5 %		
Working Temperature	℃	-20 ℃ ~ +60 ℃		
Maximum Totalizer Capacity	㎥	9999	99999	
Totalizer Scale Division	d ㎥	0.2		
Union Pipe & Nut	inch	3/4"		
Screw Thread of Inlet & Outlet		M34×1.5		
Weight	kg	1.5	1.8	3.3

2.4 Overall Dimension



Division	A	B	C	D	E	F	G
G1.6	164.0	211.5	65.0	49.30	77.25	98.6	130
G2.5	164.0	225.0	74.0	54.25	79.75	108.5	130
G4R	218.0	250.0	105.0	60.45	91.05	120.9	130

2.5 Error and Pressure Absorption Curve



3. Installation

3.1 Safety Warning

This product, as of the date of its manufacture, is designed and tested to conform to all governmental or industry safety then existing as may apply to the manufacturer.
The purchaser and user of this product are warned that compliance with the manufacturer's instructions and procedures is required in order to avoid the hazards of leaking gas resulting from improper installation, start-up or use of this product and further, that all area fire control building codes or concern the application, installation, operation or general used of this product, should be complied with.

In order to ensure the safe and proper operation of this product, the manufacturer recommends that a qualified installer install this product.

3.2 Before Startup

- ▶ Before installing the Meter, all obstacles such as oil and dust must be purge from the meter and connected pipework.
- ▶ Read the meter badge data regarding Maximum allowable operating pressure and capacity flow rate to be sure the meter meets the installation requirement.
- ▶ Sight across both swivel flanges or test with a suitable bar to determine that they are nominally in the same plane and will not cause excessive strain on the meter or piping when the connection nuts are tightened.

3.3 Startup

- ▶ Blow out the service lines before the meter is installed so that no dirt, debris or liquids of any kind can be carried into the meter when the gas is flowing in the line.
- ▶ Place a new connection gasket on each swivel pilots

▶ Support the meter so that both hubs are against the connection gasket and run the connection nuts down hand tight.

▶ In alternating fashion, tighten the nuts to an appropriate torque for the connection size.

▶ Before turning the gas on in a new installation, check the system downstream of the meter to be sure that all connections are made up and tight or that the downstream valve, if there is one, is closed.

▶ To avoid high differential pressure across the meter, open the upstream and downstream valves very slowly to prevent any pressure surges into or out of the meter.

▶ After the meter has been pressurized, apply soap solution or other good leak detecting liquid to the connections and check for leaks.

3.4 Others

▶ Do not throw of the delivery.

▶ Never analysis and remodeling without the engineer.

▶ Do not give a impulse or forcible power to the unit.

※ Installing Place

▶ Install the Gas Meter at well-ventilated place where is easily read and serviced.

▶ Clean place which is maintained over 60cm from the electric machines.

▶ Place to kept out of vibration and direct ray and Place to be apart from humidity, fire and chemicals.

4. Distribution Service

We. DAESUNG MEASURING CO., LTD. hereby certify that we guarantee of our Gas Meter regarding the project and the good operation of Gas Meter.

We will replace any Gas Meter which has any defect of project or materials free of charge. (excluding the cases where the Gas Meter has been operated inadequately in conditions that not in accordance with the recommended method.)

Moreover DAESUNG MEASURING CO., LTD. provides integrated service such as equipment maintenance, engineering, construction and production.

5. Process Control System Diagram

Process	Symbol	Parts Name	Inspection		Process Control		Equipment & Jig	Record	Re-marks
			Item	Frequency	Item	Frequncy			
Receiving Parts	⇨		Count Parts	Receiving					
Receiving Inspection	◇		Apperance Dimension Assembly	Only if Parts NO is entered			3D-measurment & Callipers	Receving inspection Sheet	
Warehousing of Parts	▽							NAIS ERP System	
Parts Delivery	⇨							Delivery Order of Parts	
① V/V seat & V/V seat plate bonding Process	◯	passed parts from process② valve seat, valve seat plate,			condition of bonding	all inspection	valve seat bonding instrument	Working Sheet	
② D/P lever Process	◯ [sub1]	passed parts from			condition of lever's	all inspection	D/P lever inserter	Working Sheet	

		process① flagshaft, assembled, D/P lever			working, lowercase appearance				
③ D/T lever welding Process	◯ [sub4]	passed parts from process③ distribution lever Ass'y			the state of D/T lever warps	all inspection	high frequency welder	Working Sheet	
④ Diaphragm & shell cover Process	◯ [sub2, sub3]	passed parts from process④ D/P Ass'y Shell cover Casegasket, bolt			the state of fasten with a bolt	all inspection	shellcover jointer(12), air driver	Working Sheet	
⑤ Crank bridge Process	◯ [sub6]	passed parts from process③ crank bridge Ass'y, valve, bolt			the state of fasten with a bolt	all inspection	air driver	Working Sheet	

Process	Symbol	Parts Name	Inspection		Process Control		Equipment & Jig	Record	Re-marks
			Item	Frequency	Item	Frequncy			
⑥ leakage test Process	□	passed parts from process⑤ lower case	appearance leakage n=4 c=0	1 per day	leak	all inspection	leak tester, fixed jig	Working Sheet, process Sheet	
⑦ pressure loss test Process	□	passed parts from process⑥ lower case	appearance pressure loss n=4 c=0	1 per day	pressure loss	all inspection	pressure loss tester,	Working Sheet, process Sheet	
⑧ upper&lower case joint Process	○ [sub5]						air driver	Working Sheet	
⑨ leakage test by water Process	□	passed parts from process⑧ Ass'y	appearance leakage n=4 c=0	1 per day	leak	all inspection	leak tester	Working Sheet, process Sheet	

⑩ operating Process	◯	passed parts from process⑨ Ass'y, name plate			circulation	all inspection	operating tester	Working Sheet	
⑪ selecting gear Process	◯	passed parts from process⑩ Ass'y, callbration gear			selecting gear's value (≤ ±5%)	all inspection	gear selecter	Working Sheet, P-control chart	
⑫ error test Process	◇	passed parts from process⑪ Ass'y, sealing lead bolt	appearance leakage appearance n=4 c=0	1 per day	errors Qmax:±1.5% 0.2Qmax:±1.5 Qmin:±3%	all inspection	error test bench, air driver	Working Sheet, process Sheet, Test Sheet	
⑬ Packing Process	◯ [sub7]	box, manual, cap	appearance, sealing			all inspection		Working Sheet	
⑭ loading & delivery	▽ ⇨								

6. Principle of parts

6.1 Product Manual

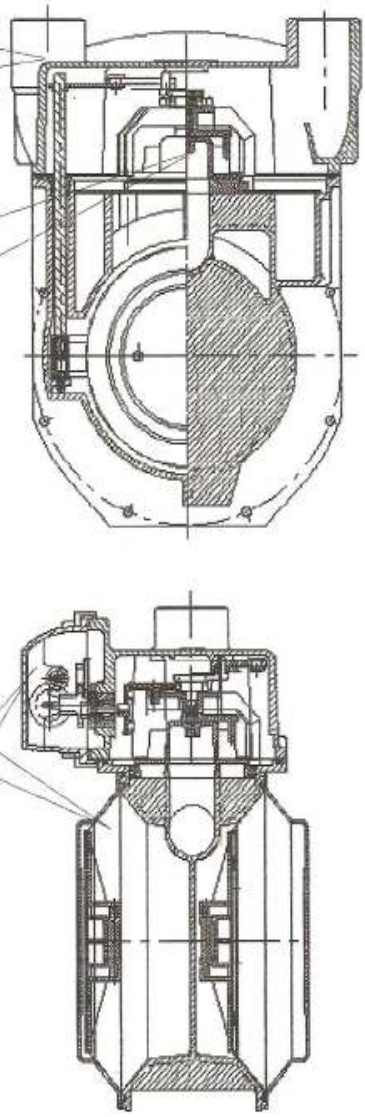
6.1.1 Operation principle

Upper case inlet is designed and constructed in order that gas come into the interior of meter. Valve is designed to be operated according to procedures defined for normal operation and is controlled so that gas might come into the measuring chamber or com out of it through seperator.

The seperator is designed and constructed to function as a guider so that gas can be input or be output from the measuring chamber. Measuring chamber is a special chamber to measure the volume of gas comming through seperator.

Diaphragm is a function to do reciprocating motion by the difference of pressure caused whenever gas come through inlet and to transmit the volume of gas measured in the measuring chambers into the indicating device. Diaphragm lever is a function to transfer revolution motion into flag shaft by means of diaphragm plate.

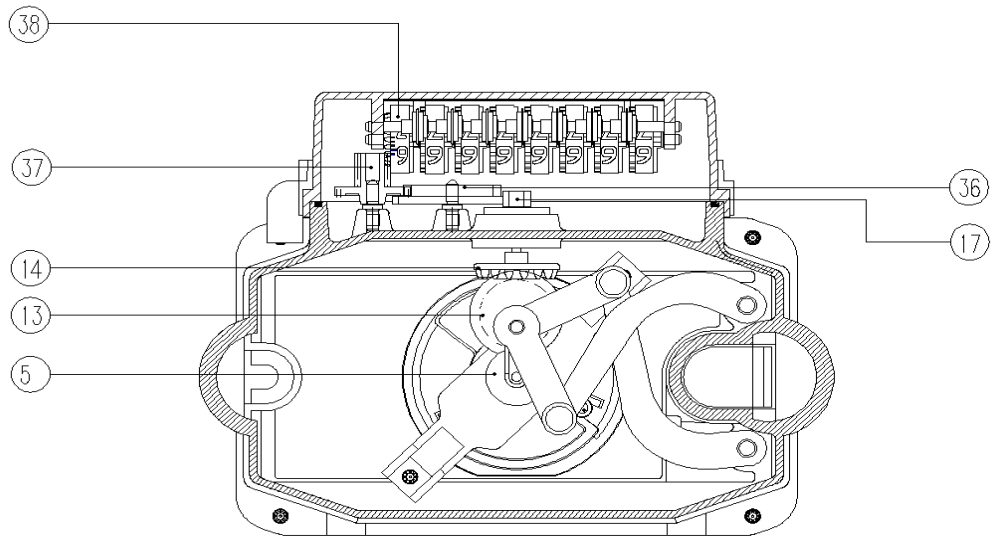
Shaft gear 10teeth is designed to transfer the revolution taken from middle gear ingo 32/12 gear by 10teeth fixed on box body. Driving drum is revolved by 32/12 gear to revolve throuth rachet in sequence. It is desinged to indicate the volume of gas, input or output from measuring chamber, by means of numeriacl values.



6.1.2 Description on the operation and structure of Change Gear

This is a special device designed to transfer turning force(or rotary force) taken from Driving Gear(14) into index indicating device, the 32/12 gear(37) is constructed with the number of tooth of its Gear, 50 and 40(36), respectively.

This is designed to be exchanged the measuring error as Change Gear(or transmission gear) and the reference of transmission ratio of change gear is the same as following Table



calculation	0%	-0.51%	-0.94%	-1.44%	-1.96%	-2.5%	-3.08%	-3.31%	-3.85%	-4.41%	-5.0%
display	0	-0.5	-1.0	-1.5	-2.0	-2.5	-3.0	-3.5	-4.0	-4.5	-5.0
pinion/gear	40/50	39/49	42/53	41/52	40/51	39/50	38/49	41/53	40/52	39/51	38/50
calculation		+0.49%	+1.06%	+1.48%	+2.04%	+2.5%	+2.94%	+3.72%	+4.17%	+4.59%	+5.0%
display		+0.5	+1.0	+1.5	+2.0	+2.5	+3.0	+3.5	+4.0	+4.5	+5.0
pinion/gear		41/51	38/47	39/48	40/49	41/50	42/51	39/47	40/48	41/49	42/50

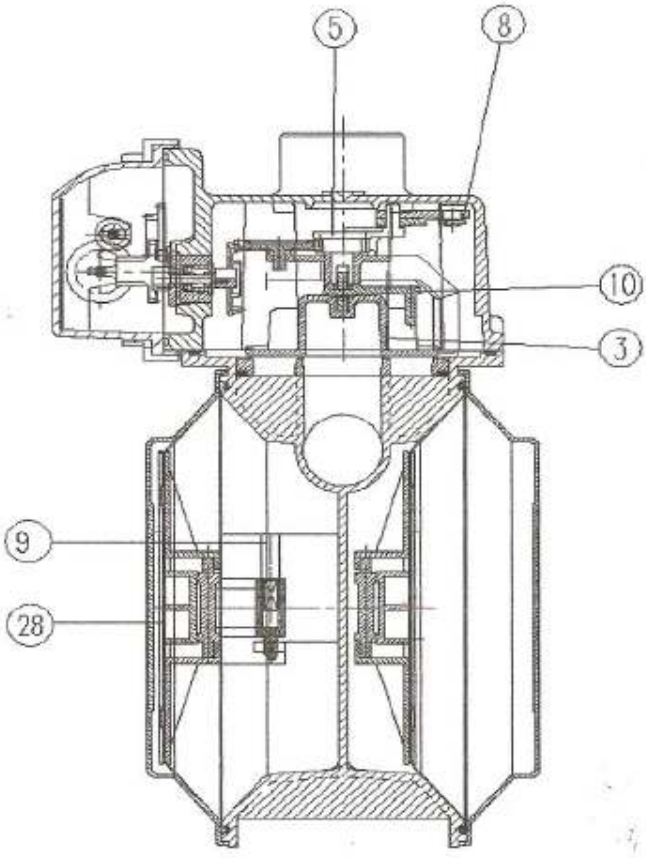
6.2 Analysis assembly of product

6.2.1 General description on Crank part

This is device to kept the constant condition of the volume transferring reciprocating motion, which is caused by the movement of inflowing and outflowing gas after being taken turning force of flag shaft(9) built in measuring chamber, into revolution motion and is a critical function to keep the traveling space of diaphragm(28) in measuring chamber. We can say that this is function to keep the cyclic volume of the meter constant.

In addition, this part has a special device to connect the opening and closing between valve(3) and separator(or distributing chamber) and also this part can adjust the sign (+,−)according to angle of crank lever(10)

Parts	Parts NO	Material
Valve	3	Phenol
Crank	5	Polyacetal
Distribution lever	8	Steel
Falg shaft	9	C3604
Crank lever	10	Polyacetal
Diaphragm	28	N.B.R



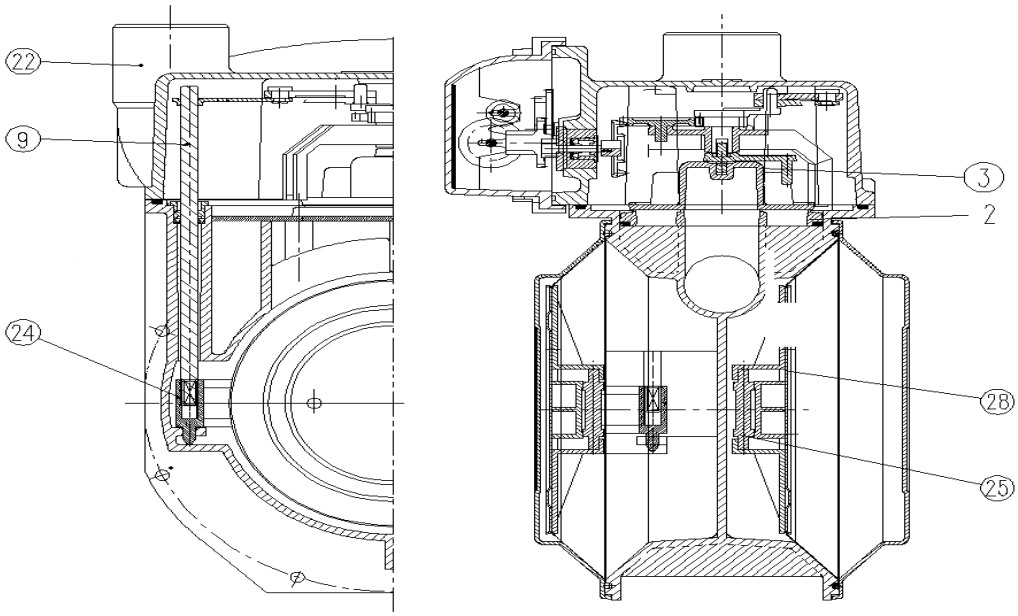
6.2.2 The description of its operation on Measuring chamber

Diaphragm(28) is to do reciprocating motion by different pressure of diaphragm built in measuring chamber when gas is inflowing into the valve(3).

This is a device to convert the reciprocating motion to revolution motion by means of D/P lever(25) connected into Flag shaft(9).

Furthermore, it is designed and constructed to form four measuring chamber with two diaphragm and inflowing and outflowing of gas is happened at each measuring chamber at the same time and result in eight-stroke to be divided.

Diaphragm plate is designed and constructed to keep diaphragm horizontal when diaphragm doing reciprocating motion and also it is to function to keep the volume of gas constant and to help to do revolution motion to be transferred into Flag shaft.



Parts	Valve Seat	Valve	Flag shaft	Upper case	Diaphragm lever	Diaphragm
Parts NO	2	3	9	22	24,25	28
Material	Phenol	Phenol	C3604	ALDC8S	Polyacetal	N.B.R

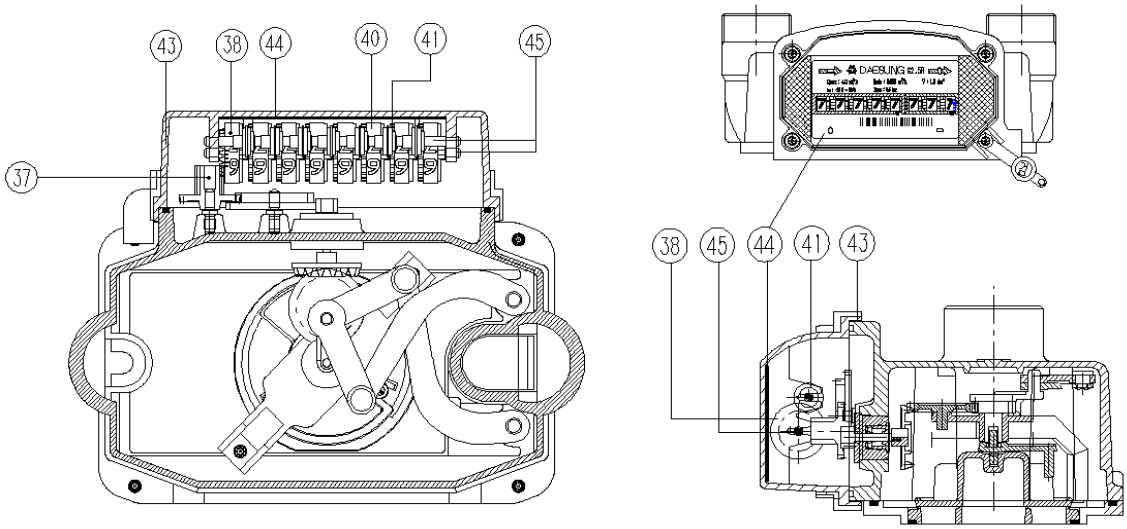
6.2.3 The description of its principle on Counter parts

Drum shaft(45) in the counter frame is assembled with the parts of Counter and also assembled with Driving Drum(38) and seven of Black Drum(40)

Rachet(41) is inserted with Drum shaft between each Drum and so it is characterized by the structure which 32/12 gear(37) transfer turning force, to be taken form calibration Gear, into Driving Drum.

Driving Drum is to indicate minimal scale with unit 0.2L and Black Drum is to indicate the volume of gas, 10 ℓ , 100 ℓ , 1 ㎥, 10 ㎥, 100 ㎥, 1000 ㎥, 10000 ㎥ with basic unit sequent.

In order to help of identify the unit, it is a function to divide the Index Box Name Plate(44) with Red and Black section.

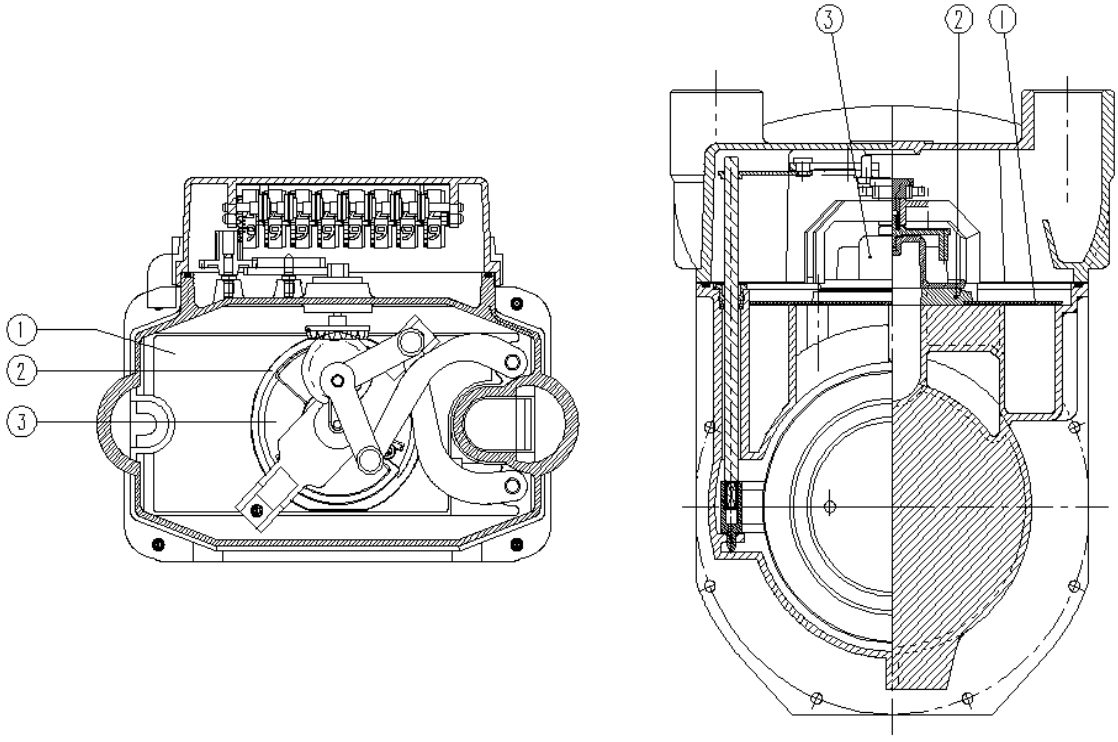


Parts	32/12 Gear	Driving Drum	Black Drum	Rachet	Index Box	Index Box Name Plate	Drum Shaft
Parts NO	37	38	40	41	43	44	45
Material	Polyacetal	Polyacetal	Polyacetal	Polyacetal	Polycarbonate	P.V.C	STS304

6.2.4 The description of its operation on valve and separator

This assembly drawing is composed of separator and valve(3). separator is connected with gas pathway in measuring chamber and valve is a function to connect between input side and output side in measuring chamber.

Each part of this assembly drawing is constructed with high qualified material against corrosion and temperature changes and include the structure designed to keep its balance after being lapped precisely.



Parts	Valve seat plate	Valve seat	Valve
Parts NO	1	2	3
Material	G.I	Phenol	Phenol

6.3 List of component and circuit

6.3.1 [G1.6] Parts list and assembly

NO	Description	Material	Q'TY	Remarks	NO	Description	Material	Q'TY	Remarks
1	valve seat plate	E.G.I	1		25	counter plate	G.I	2	
2	valve seat	Phenol	1		26	diaphragm(L)	N.B.R	1	
3	valve	Phenol	1		27	diaphragm(R)	N.B.R	1	
4	crank bridge	polyacetal	1		28	shell cover(L, R)	G.I	2	
5	crank	polyacetal	1		29	bridge	G.I	2	
6	connecting rod	polyacetal	2		30	gear axle	C3604	2	
7	distribution lever	polyacetal	2		31	calibration	polyacetal	1	
8	flag shaft	SUM24	2		32	gear 32/11 teeth	polyacetal	1	
9	crank lever	polyacetal	1		33	driving drum	polyacetal	1	
10	flag shaft bush	polyacetal	2		34	plug	ALDC12	1	
11	flag shaft gasket	N.B.R	2		35	black drum	polyacetal	6	
12	middle gear	polyacetal	1		36	rachet	polyacetal	6	
13	index driver gear	polyacetal	1		37	index box gasket	E.P.D.M	1	
14	reverse lock	polyacetal	1		38	index box	poly carbonate	1	
15	shaft gear 10 teeth	polyacetal	1		39	index box name plate	P.V.C	1	

16	I.S box body	C3604	1		40	shaft	STS304	2	
17	I.S box bush	polyacetal	1		41	name plate	AL	1	
18	I.S box gasket	N.B.R	1		42	sealing lead	Pb	1	
19	case gasket	N.B.R	1		43	sealing plate	STS	1	
20	upper case	ALDC12	1		44	cap	P.P	2	
21	lower case	ALDC12	1		45	index box bolt	STS(7)	4	
22	diaphragm lever(L)	polyacetal	1		46	case joint bolt	STS(11)	4	
23	diaphragm lever(R)	polyacetal	1		47	shell cover bolt	STS(7)	12	
24	diaphragm plate	polyacetal	2		48	crank bridge bolt	STS(9)	2	

6.3.2 [G2.5] Parts list and assembly

NO	Description	Material	Q'TY	Remarks	NO	Description	Material	Q'TY	Remarks
1	valve seat plate	E.G.I	1		25	diaphragm plate	polyacetal	2	
2	valve seat	Phenol	1		26	counter plate	G.I	2	
3	valve	Phenol	1		27	Diaphragm(L,R)	N.B.R	2	
4	crank bridge	polyacetal	1		28	shell cover(L,R)	G.I	2	
5	crank	polyacetal	1		29	bridge	G.I	2	common use
6	connecting rod	polyacetal	2		30	gear axle	C3604	2	common use
7	connecting rod pin	C3604	2	common use	31	calibration	polyacetal	1	common use
8A	distribution lever(L)	steel	1		32	gear 32/12 teeth	polyacetal	1	common use
8B	distribution lever(R)	steel	1		33	driving drum	polyacetal	1	common use
9	flag shaft	SUM24	2		34	plug	ALDC12S	1	common use
10	crank lever	polyacetal	1	common use	35	black drum	polyacetal	7	common use
11	flag shaft bush	polyacetal	2	common use	36	rachet	polyacetal	7	common use
12	flag shaft gasket	N.B.R	2	common use	37	index box gasket	E.P.D.M	1	
13	middle gear	polyacetal	1		38	index box	poly carbonate	1	
14	index driver gear	polyacetal	1	common use	39	index box name plate	P.V.C	1	

15	reverse lock	polyacetal	1	common use	40	shaft	STS304	2	
16	shaft gear 10 teeth	polyacetal	1	common use	41	name plate	AL	1	common use
17	I.S box body	C3604	1	common use	42	sealing lead	Pb	1	common use
18	I.S box bush	polyacetal	1	common use	43	sealing plate	STS	1	common use
19	I.S box gasket	N.B.R	1	common use	44	cap	P.P	2	common use
20	case gasket	N.B.R	1		45	index box bolt	STS(9)	4	common use
21	upper case	ALDC12	1		46	case joint bolt	STS(11)	4	common use
22	lower case	ALDC12	1		47	shell cover bolt	STS(7)	16	common use
23	diaphragm lever(L)	polyacetal	1		48	crank bridge bolt	STS(9)	2	common use
24	diaphragm lever(R)	polyacetal	1						

6.3.3 [G4R] Parts list and assembly

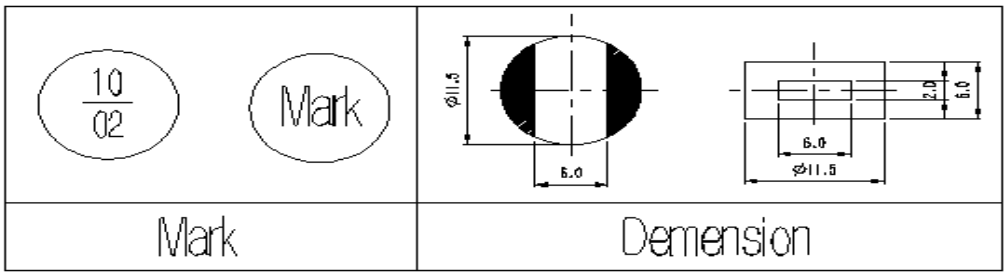
NO	Description	Material	Q'TY	Remarks	NO	Description	Material	Q'TY	Remarks
1	valve seat plate	ALDC12	1		25	diaphragm plate	polyacetal	2	
2	valve seat	Phenol	1		26	counter plate(L,R)	G.I	2	
3	valve	Phenol	1		27	Diaphragm(L,R)	N.B.R	2	
4	crank bridge	polyacetal	1		28	shell cover	G.I	2	
5	crank	polyacetal	1		29	bridge	G.I	2	common use
6	connecting rod	polyacetal	2		30	gear axle	C3604	2	common use
7	connecting rod pin	C3604	2	common use	31	calibration	polyacetal	1	common use
8	distribution lever	steel	2		32	gear 32/12 teeth	polyacetal	1	common use
9	flag shaft	SUM24	2		33	driving drum	polyacetal	1	common use
10	crank lever	polyacetal	1	common use	34	black drum	polyacetal	7	common use
11	flag shaft bush	polyacetal	2	common use	35	rachet	polyacetal	7	common use
12	flag shaft gasket	N.B.R	2	common use	36	index box gasket	E.P.D.M	1	
13	middle gear	polyacetal	1		37	index box	poly carbonate	1	
14	index driver gear	polyacetal	1	common use	38	index box name plate	P.V.C	1	

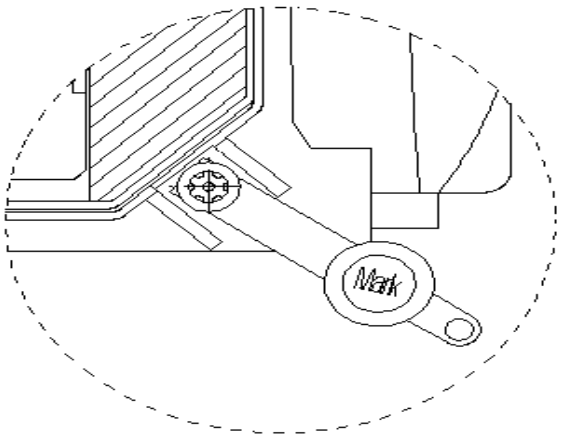
15	reverse lock	polyacetal	1	common use	39	shaft	STS304	2	
16	shaft gear 10 teeth	polyacetal	1	common use	40	name plate	AL	1	common use
17	I.S box body	C3604	1	common use	41	sealing lead	Pb	1	common use
18	I.S box bush	polyacetal	1	common use	42	sealing plate	STS	1	common use
19	I.S box gasket	N.B.R	1	common use	43	cap	P.P	2	common use
20	case gasket	N.B.R	1		44	index box bolt	STS(9)	4	common use
21	upper case	ALDC12	1		45	case joint bolt	STS(11)	4	common use
22	lower case	ALDC12	1		46	shell cover bolt	STS(7)	16	common use
23	diaphragm lever(L)	polyacetal	1		47	crank bridge bolt	STS(9)	2	common use
24	diaphragm lever(R)	polyacetal	1		48	outlet gasket	N.B.R.	1	

6.4 Seal and connecting drawing of product

This is a drawing which is the location of verification mark and seals

Appearance of sealing lead is to show the expiration year on the upper side, the marked month on the lower side and the certification Mark on the back side.





7. Process Inspection System

7.1 Working Range

The authorized values of maximum flow rates and the corresponding values of the upper limits of the minimum flow rates are given in the following table below.

Class	Qmax (㎥/h)	Qmin (㎥/h)
G1.6	2.5	0.016
G2.5	4.0	0.025
G4R	6.0	0.04

7.2 Maximum capacity of Gas meter

The difference of pressure between inlet and outlet of a meter shall be 20mmH_2O or less when a indicated minimum gas with about 1.2kg/㎥, density of air is flowed: for meter besides petroleum gas meter the difference of pressures between inlet and outlet of a meter shall be 15mmH_2O or less when indicated minimum gas with 0.8kg/㎥, density of air is passed, provided that under the test using air the difference of pressure shall be 20mmH_2O or less.

7.3 Sensitivity (3L/h)

There shall be clear of indicated when volume of gas corresponding to volume in the indicating chamber is passed. The sensitivity of our gas meter is 3L/h or less.

7.4 Pressure absorption

When the pressure at outlet is setting to 40mmH_2O by air or gas, the scope or change of gas of inlet shall be below 15mmH_2O.

7.5 Tolerance in difference of quantity.

When gas or air passed with flow rate are below table for Maximum flow rate, the difference of quantity should be placed on from 0.1Qmax to Qmax within ±1.5% of the corresponding quantity.

7.6 Change in the difference of pressure due to changing in the temperature.

The difference of quantity at about 40℃ when nitrogen or dry air are passed shall have deviation of less than 1.5% from the value in the difference of quantity this same deviation value applies to the case of temperature of about −10℃ and 20℃ in the above mentioned condition.

7.7 Pressure Resistance

When gas or air with 0.1bar pressure are maintained for about 3 minutes in a tightly closed condition within the meter, the pressure drop shall be less than 20mmH_2O.

7.8 Operation

The part contacting meter's valve and valve seat, tank transmitting the quantity of measurement and gear rotating parts shall be frictionless and smooth operation so that no change in the sensitivity as per subclause 7.3 and change of pressure as per subclause 7.4 takes pressure.

7.9 Function under overload

When air in excessive of maximum flow rate is passed as per stipulation for a certain time length, there should be no abnormal functions.

7.10 Corrosion resistance of diaphragm

This diaphragm should have (combined to synthetic fiber) elasticity, corrosion resistance and non-hardening property.

7.11 Strength of Glass

▶ Those parts under contact with direct pressure of gas among glasses or synthetic fiber (hereinafter "glasses") shall have enough strength.

▶ Glasses as mentioned in 7.11 shall not crack, destroyed or turned torque under abrupt change of temperature.

7.12 Shock of painted surface

When shock is applied to painted surface of meter, no crack, exfoliation or damages shall be found

7.13 Accuracy test

		Unit	G1.6	G2.5	G4R
Maximum working pressure		bar	0.5	0.5	0.5
Maximum permissible error	Qmin≤Q<0.1Qmax	%	± 3.0	± 3.0	± 3.0
	0.1Qmax≤Q≤Qmax		± 1.5	± 1.5	± 1.5

Our gas meter is designed to meet the requirement specified in OIML R6 & R31 as well as KS standard.