ESKA

Gas Technologies

ERG H6

Direct Actine Gas Pressure Regulator

ESKA

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About Us

With a deep understanding of the need for manufacturers to be close to gas distribution companies understanding their requirements and providing tailored solutions, ESKA grew to become a leading manufacturer of gas stream equipment. We start every day with a belief that change is constant, and the flexibility to follow that change and provide up to date solutions is crucial in the energy sector.

We manufacture gas stream equipment that are designed based on the needs of our partners. We strive to help gas distribution companies provide safe energy to their clients and to assist our partners with flexible business models that promote mutual growth.

Our commitment is to continually improve our products, ensuring the highest standards of safety and quality at an affordable cost, protecting end users while supporting our partners' success.

60 Years Know-how

Global Reach in 65 Countries

Localized Support

Application Area

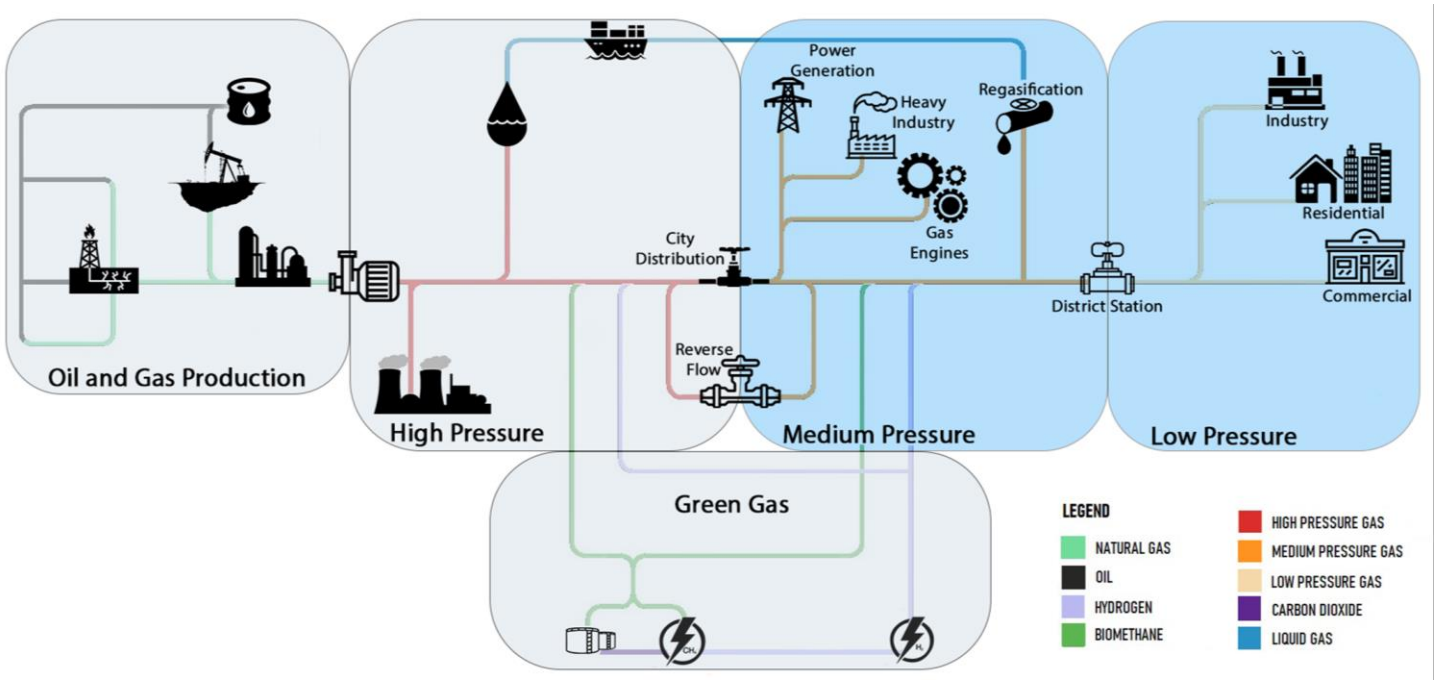


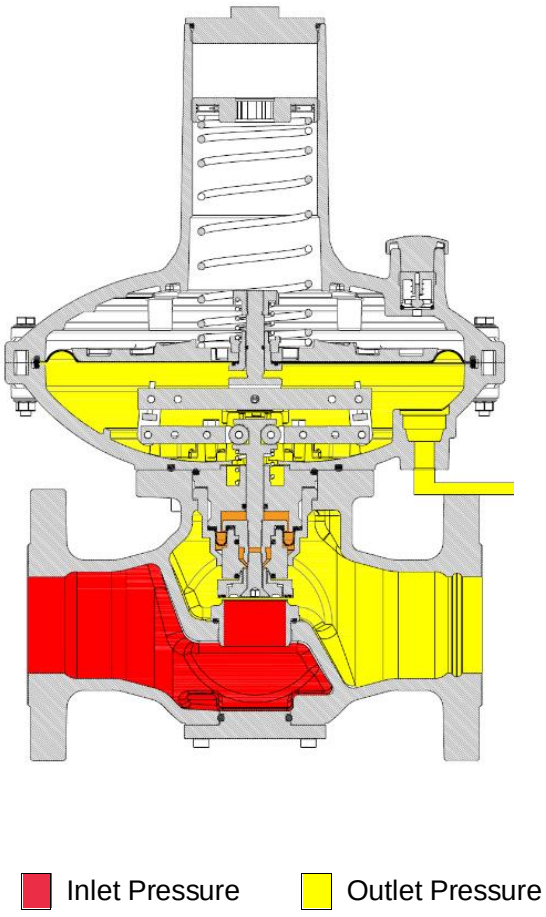
Figure 1: Gas Distribution Map

Area of Service:

Introduction

The ERG-H6 Series is a high-performance, direct-acting gas pressure regulator designed for efficient control of inlet pressure to achieve a stable, desired outlet pressure. It is ideally suited for medium and low-pressure natural gas distribution networks and is also compatible with pretreated non-corrosive gaseous fluids. Widely used in commercial and industrial applications, the ERG-H6 offers optional safety features such as a relief valve, UPSO, and OPSO systems, ensuring reliable and secure operation. Classified as Fail Open, ERG-H6 complies with the European Standard EN334 and is engineered for versatility and durability in demanding environments.

Figure 2: ERG H6 Pressure Regulation



Features

The ERG-H6 is a direct-acting gas pressure regulator designed for medium to high-pressure applications in both domestic and industrial settings. It effectively reduces inlet pressures ranging from 1 to 20 bar to desired outlet pressures between 21 mbar and 4.5 bar, ensuring precise control with an accuracy class of AC10 (±10%). The regulator features a lock-up pressure tolerance of up to +10% and can be equipped with safety mechanisms such as overpressure shut-off (OPSO), under pressure shut-off (UPSO), and a relief valve. Operating efficiently within a standard temperature range of -20°C to +60°C, the ERG-H6 also offers a low-temperature variant capable of functioning at temperatures as low as -40°C. Its inline flow direction and "top entry" design facilitate easy maintenance without the need to remove the body from the pipeline.

In practical applications, the ERG-H6 is particularly beneficial in natural gas distribution networks, where maintaining consistent pressure is crucial for safety and efficiency. For instance, in industrial facilities utilizing gas-fired equipment, the ERG-H6 ensures that machinery receives gas at optimal pressures, thereby enhancing performance and reducing the risk of equipment damage due to pressure fluctuations.

Figure 3: ERG H6/HZ6

Characteristics

Table 1: ERG-H6 Series characteristics

Feature	Values		
Design Pressure	PS4, PS6, PS10, PS16, PS20		
Inlet Pressure	0,5 to 20 bar or 0,1 to 20 bar[1]		
Flow	0 to 4000 m^3/h		
	LPO Version	**MPO Version**	**HPO Version**
Outlet Pressure Range (Wd)	15-80 mbar	80-340 mbar	340-4200 mbar
Safety shut-off Pressure Range (Wdo)	30-5500 mbar		
Safety shut-off Pressure Range (Wdo)	10-3200 mbar		
Accuracy Class (AC)	±10% AC10, ±5% AC5[1] or ±20% AC20[1]		
Lock-up over pressure (SG)	±%10 SG10[1], ±%20 SG20, ±%30 SG30[1]		
	Standard Versions		LT Version[2]
Ambient temperature	-10°C to 60°C	-20°C to 60°C	-40°C to 60°C[1]
Configuration	Inline		
Connections	Flanged ANSI 150 DN40, Flanged ANSI 150 DN50, Threaded[4] DN50		

[1] Upon request
[2] The stated value is the temperature at which the device's mechanical resistance and leakage are tested. Extra body parts may not be suitable for that version.
[3] The standard inlet and outlet pressure are set as per EN 334 standard.
[4] Threaded connections as EN 10266-2, TS EN ISO 228-1, ASME B1.20.1 NPT Standards.

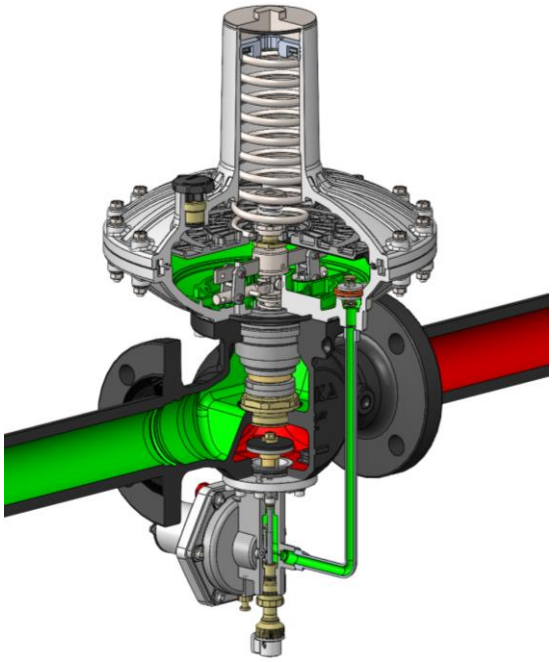


Figure 4: ERG-HZ6 Pressure 3D Display

Materials

Table 2: ERG H6 Series Materials

Part	Material*	Standard
Body	Cast Iron EN GJS 400-15 (GGG40)	EN 1563
Seat	Brass	EN 12164 and/or 12165
Cover	Aluminum EN AC 43500	EN 1706
Diaphragm	Elastomer, Fabric-Reinforced and Non-Reinforced NBR	EN 549
*Above materials are listed for standard models. For other request please refer to our sales team or your local distributer.		

Approvals

The ERG-H6 regulator is meticulously designed in compliance with the European standard EN 334, guaranteeing exceptional performance and reliability. It incorporates a fail-open mechanism that ensures safety and efficiency, responding dynamically to pressure variations as per EN 334 requirements. Furthermore, the ERG-H6 is certified under the European Directive 2014/68/EU (PED), demonstrating its conformity to rigorous safety and pressure equipment standards.

EN334

EN 14382

PED

Technical Data

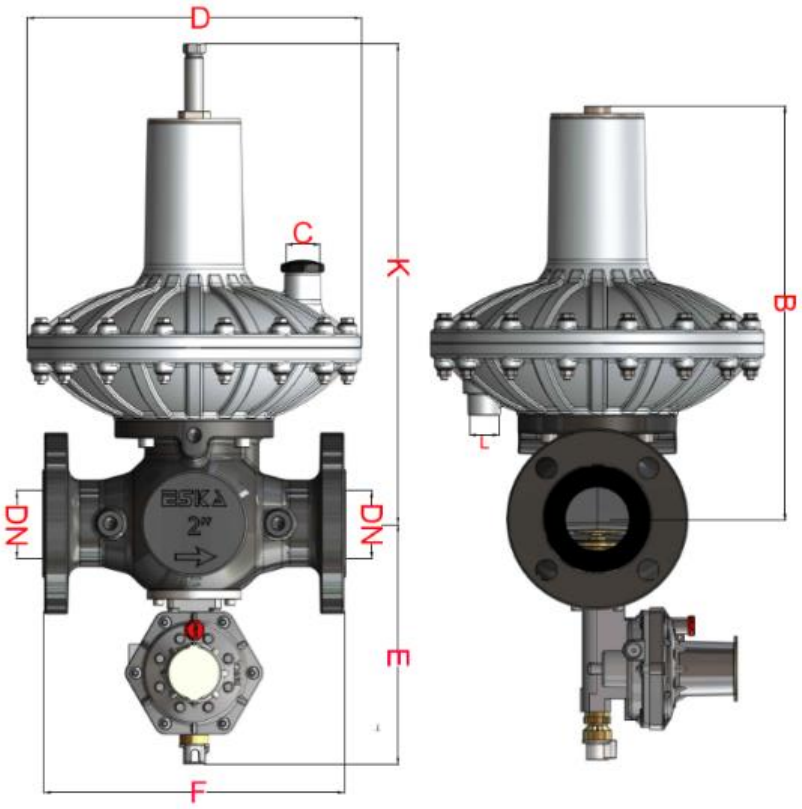


Figure 5: ERG H6 Technical Dimensions

Nominal Diameter	DN40	DN50
Size (inches)	1” 1/2	2”
A	214	227
B	346	346
C	G 1/2’’	G 1/2’’
D	280	280
E	215	215
F	222	254
K	440	440
L	G 1/4’’	G 1/4’’

Table 3: ERG-H6 Dimensions

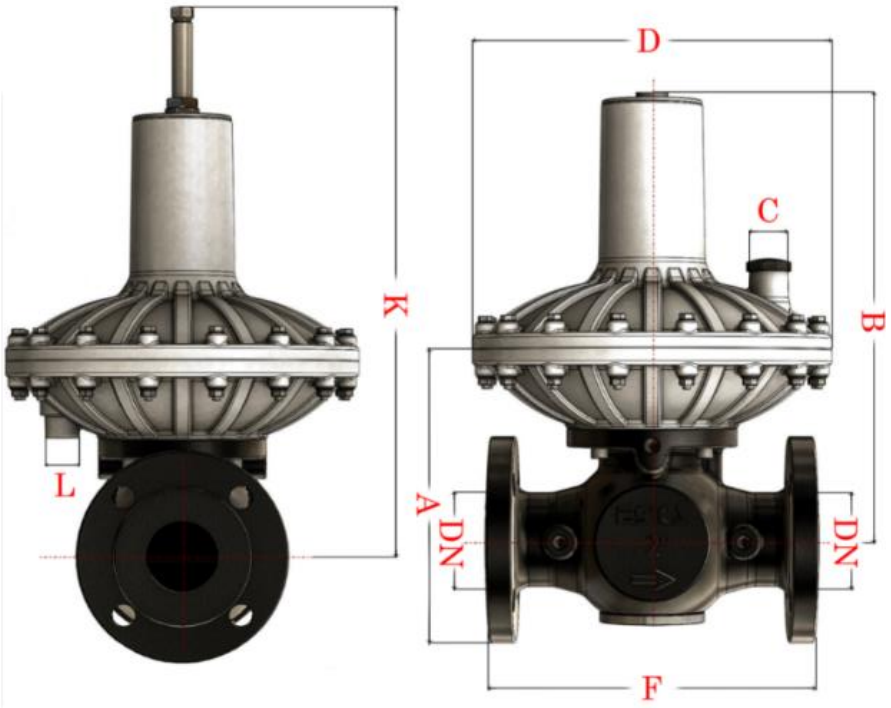


Figure 6: ERG HZ6 Technical Dimensions

Nominal Diameter	DN40	DN50
Size (inches)	1” 1/2	2”
A	214	227
B	346	346
C	G 1/2”	G 1/2”
D	280	280
E	-	-
F	222	254
K	440	440
L	G 1/2”	G 1/2”

Table 4: ERG HZ6 Dimensions

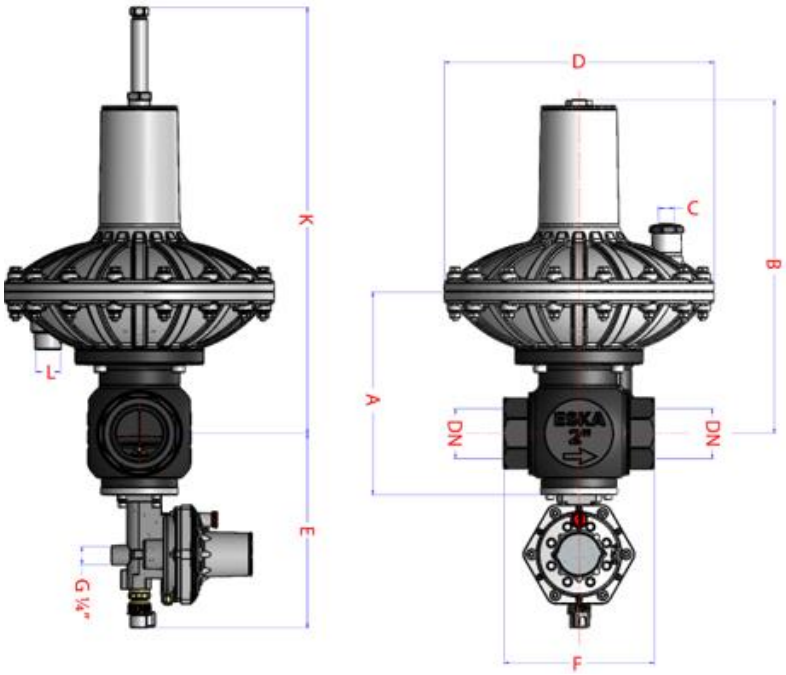


Figure 7: ERG H6 (Threaded) Technical Dimensions

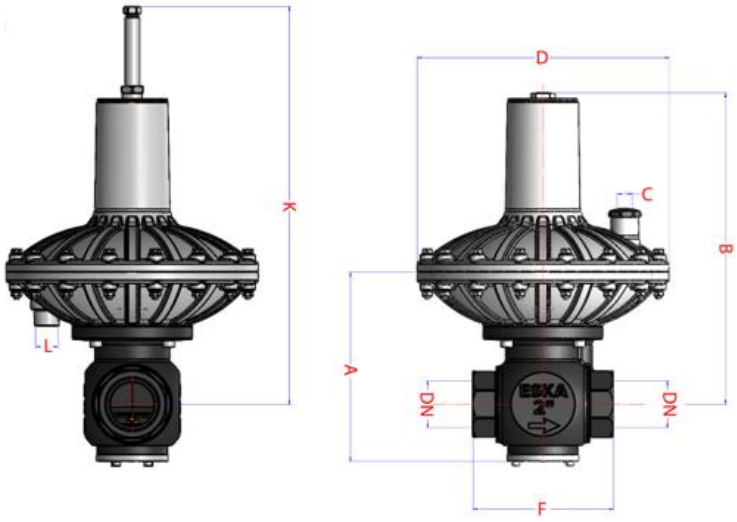


Figure 8: ERG HZ6 (Threaded) Technical Dimensions

Nominal Diameter	DN50 (Threaded)
Size (inches)	2”
A	211
B	345
C	G 1/2”
D	280
E	175
F	156
K	433
L	G 1/4”

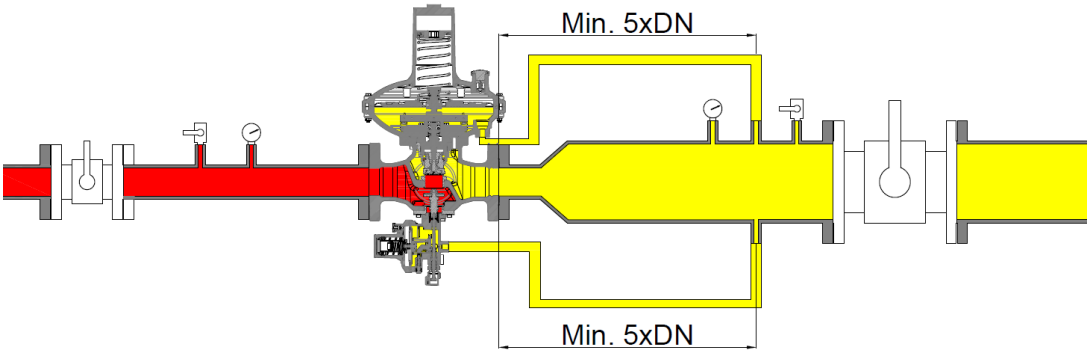
Table 5: ERG H6 (Threaded) Dimensions

Nominal Diameter	DN50 (Threaded)
Size (inches)	2”
A	211
B	345
C	G 1/2”
D	280
E	-
F	156
K	433
L	G 1/4”

Table 6: ERG HZ6 (Threaded) Dimensions

Installation Options

Standard Regulator

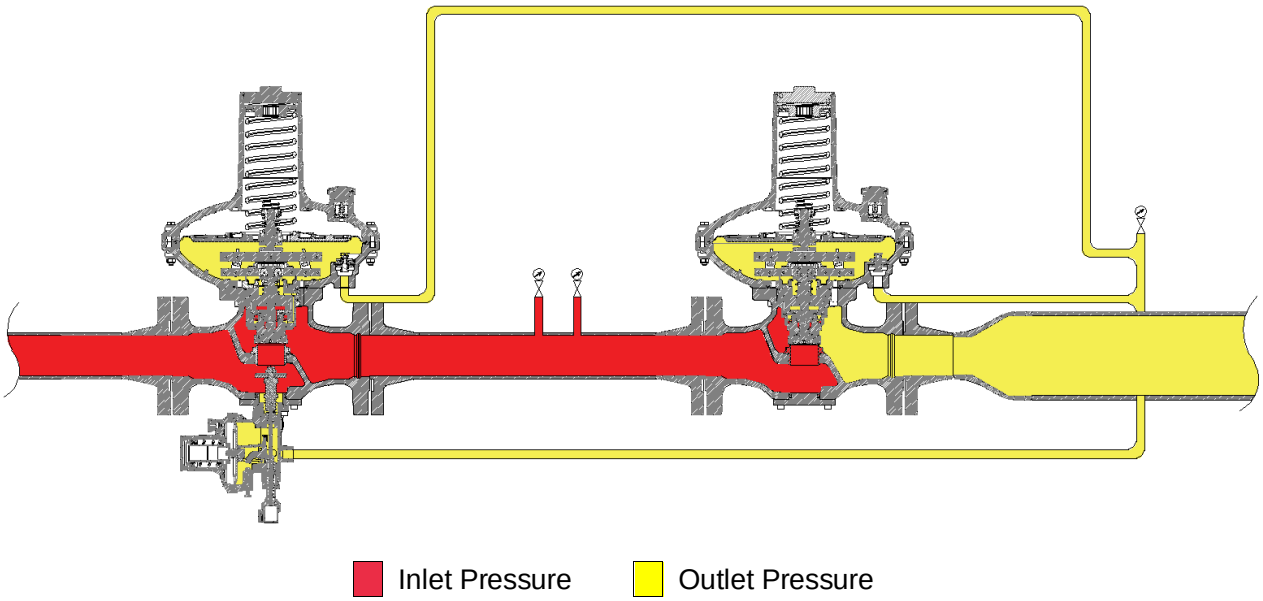


In-Line Monitor

The monitor regulator is installed on the line before the active regulator.

Although the function of the monitor regulator is different, the two regulators are almost identical in terms of mechanical components. The only difference is that the monitor regulator is set to a higher pressure than the active regulator.

The flow rate of the monitor regulator is lower than that of the active regulator. Therefore, losses of approximately 10-20% occur in the Kg and Cg values.



Calculations

While selecting the regulator, a sufficient safety factor should always be left in terms of capacity, and a regulator with a capacity at least 10% higher than the maximum capacity of the line should be selected. As the density of the gas increases, the gas velocity, which is the flow rate, decreases because the gas becomes heavier.

- For Example:

Standard Conditions for Sakarya/Turkey: It is 25°C and 1.01325 bar.

Normal Conditions in General: It is 273.15 K (0°C) and 1.01325 bar.

The conversion from standard conditions to normal conditions is calculated approximately by the formula N m3/h = 0.94795 x St m3/h

Specific weight of air: 1,293 kg/m^3

Specific gravity of natural gas according to EN 334: 0,8275 kg/m^3

Specific weight of natural gas according to Turkey: 0,78 kg/m^3

Capacity Change Formula According to Gas Type.

For conversion from X gas to Y gas

Flow rate of Y gas m3/h = X flow rate of gas m3/h $x \sqrt{\frac{X gas\ specific\ weight\ kg/m^3}{Y gas\ specific\ weight\ kg/m^3}}$

Cg and Kg Calculation:

Kg; fully opened valve (disc), t=15°C gas inlet temperature, 0.83 kg/m3 special weight natural gas (d = 0.64 density natural gas), inlet pressure: Inlet pressure (pu + 1.013) and outlet pressure as absolute pressure: The inlet pressure as absolute pressure is calculated with the (pd + 1.013) situation.

When calculation is required for the flow and diameter selection of a regulator, the following calculations based on the regulator's cg and kg coefficients are used. These calculations are valid for fully open position and for different operating conditions.

Table 6: ERG H6 Calculation Coefficient

Ø 280 LP-MP (up to 0.3 bar outlet pressure)		
Nominal Diameter	**DN40**	**DN50**
	1 1/2”	**2”**
Cg Coefficient	656	789
KG Coefficient	690	830
K1 Coefficient	94	85

Ø 280 HP (up to 4.2 bar outlet pressure)		
Nominal Diameter	**DN40**	**DN50**
	1 1/2”	**2”**
Cg Coefficient	703	772
KG Coefficient	740	812
K1 Coefficient	94	85

Q = Flow rate (Scm³/h), Pu = Inlet pressure (bar) (abs), Pd = Outlet pressure (bar) (abs), where:

1. When Cg and Kg values are known along with Pu and Pd, the flow rate can be calculated as follows:

   a. Subcritical conditions ($Pu < 2\,x\,Pd$):

   $$Q = Kg\,x\,\sqrt{(Pd\,x\,(Pu - Pd))} \qquad Q = 0.526\,x\,Cg\,x\,Pu\,x\,\sin(K1\,x\,\sqrt{\left(\frac{(Pu-Pd)}{Pu}\right)})$$

   b. Critical conditions ($Pu \geq 2\,x\,Pd$):

   $$Q = Kg/2\,x\,Pu \qquad Q = 0.526\,x\,Cg\,x\,Pu$$

2. Conversely, if Pu, Pd, and Q values are known, Cg and Kg values and the regulator size can be calculated using the following formulas:

   a. Subcritical conditions ($Pu < 2\,x\,Pd$):

   $$Kg = Q\,/\,\sqrt{(Pd\,x\,(Pu - Pd))} \qquad Cg = Q/\,0.526\,x\,Pu\,x\,\sin(K1\,x\,\sqrt{\left(\frac{Pu-Pd}{Pu}\right)})$$

   b. Critical conditions ($Pu \geq 2\,x\,Pd$):

   $$Kg = 2\,x\,Q\,/\,Pu \qquad Cg = Q\,/\,(0.526\,x\,Pu)$$

Gas Velocity Calculation:

In order to get the best performance from the product, to avoid premature wear and to limit sound emission, it is recommended that the gas velocity at the outlet flange does not exceed 150 m/s.

$$V = 345{,}92\ x\ \frac{Q}{DN^2}\ x\ \frac{1 - 0{,}002xPd}{1 + Pd}$$

V : Gas Velocity (m/sec)

Q : Flow rate (Stm3/h)

DN : Nominal Diameter of Regulator (mm)

Pds : Output pressure (barg)

Capacity Table

DN 40			Outlet Pressure																	
Inlet Pressure			21 mbar/ 2,1 kPa		50 mbar / 5 kPa		100 mbar / 10 kPa		300 mbar / 30 kPa		500 mbar / 50 kPa		1000 mbar / 100 kPa		2000 mbar / 200 kPa		3000 mbar / 300 kPa		4000 mbar / 400 kPa	
barg	PSI	mPa	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h
0,3	4,35	0,03	300	342	280	319,2	310	353,4	-	-	-	-	-	-	-	-	-	-	-	-
0,5	7,25	0,05	410	467,4	400	456	350	399	-	-	-	-	-	-	-	-	-	-	-	-
1	14,5	0,1	600	684	590	672,6	650	741	600	684	530	604,2	-	-	-	-	-	-	-	-
1,5	21,75	0,15	800	912	790	900,6	850	969	800	912	750	855	650	741	-	-	-	-	-	-
2	29	0,2	900	1026	910	1037,4	1000	1140	1050	1197	950	1083	800	912	-	-	-	-	-	-
2,5	36,25	0,25	1000	1140	1120	1276,8	1050	1197	1150	1311	1070	1219,8	1000	1140	1110	1265,4	-	-	-	-
3	43,5	0,3	1090	1242,6	1100	1254	1100	1254	1250	1425	1200	1368	1150	1311	1110	1265,4	-	-	-	-
4	58	0,4	1100	1254	1150	1311	1250	1425	1400	1596	1400	1596	1450	1653	1550	1767	1450	1653	-	-
10	145	1	-	-	-	-	-	-	1700	1938	1950	2223	1850	2109	2000	2280	1950	2223	1850	2109
12	174	1,2	-	-	-	-	-	-	1700	1938	1950	2223	1850	2109	2000	2280	1950	2223	1850	2109
19	275,5	1,9	-	-	-	-	-	-	1700	1938	1950	2223	1850	2109	2000	2280	1950	2223	1850	2109
*Values in the table are for AC10 -*Kg/h values are for LPG -*Sm³/h values are for Natural Gas																				

Table 7: ERG-H6 Series 1 – 1/2'' Flanged Capacity Table

DN 50			Outlet Pressure																	
Inlet Pressure			21 mbar/ 2,1 kPa		50 mbar / 5 kPa		100 mbar / 10 kPa		300 mbar / 30 kPa		500 mbar / 50 kPa		1000 mbar / 100 kPa		2000 mbar / 200 kPa		3000 mbar / 300 kPa		4000 mbar / 400 kPa	
barg	PSI	mPa	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h
0,3	4,35	0,03	360	410,4	360	410,4	330	376,2	-	-	-	-	-	-	-	-	-	-	-	-
0,5	7,25	0,05	500	570	480	547,2	455	518,7	-	-	-	-	-	-	-	-	-	-	-	-
1	14,5	0,1	650	741	650	741	710	809,4	660	752,4	640	729,6	-	-	-	-	-	-	-	-
1,5	21,75	0,15	850	969	750	855	1010	1151,4	900	1026	850	969	650	741	-	-	-	-	-	-
2	29	0,2	1000	1140	850	969	1110	1265,4	1250	1425	1150	1311	1050	1197	-	-	-	-	-	-
2,5	36,25	0,25	1100	1254	1000	1140	1270	1447,8	1350	1539	1250	1425	1250	1425	1000	1140	-	-	-	-
3	43,5	0,3	1200	1368	1100	1254	1400	1596	1550	1767	1450	1653	1450	1653	1050	1197	-	-	-	-
4	58	0,4	1250	1425	1200	1368	1820	2074,8	1900	2166	1900	2166	1900	2166	1600	1824	1250	1425	-	-
10	145	1	-	-	-	-	-	-	2500	2850	2300	2622	2300	2622	4000	4560	4000	4560	4000	4560
12	174	1,2	-	-	-	-	-	-	2500	2850	2300	2622	2300	2622	4000	4560	4000	4560	4000	4560
19	275,5	1,9	-	-	-	-	-	-	2500	2850	2300	2622	2300	2622	4000	4560	4000	4560	4000	4560
*Values in the table are for AC10 -*Kg/h values are for LPG - *Sm³/h values are for Natural Gas																				

Table 8: ERG-H6 Series 1 – 1/2'' Flanged Capacity Table

DN 50 Threaded			Outlet Pressure																	
Inlet Pressure			21 mbar/ 2,1 kPa		50 mbar / 5 kPa		100 mbar / 10 kPa		300 mbar / 30 kPa		500 mbar / 50 kPa		1000 mbar / 100 kPa		2000 mbar / 200 kPa		3000 mbar / 300 kPa		4000 mbar / 400 kPa	
barg	PSI	mPa	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h	Sm³/h	Kg/h
0,3	4,35	0,03	120	136,8	165	188,1	185	210,9	-	-	-	-	-	-	-	-	-	-	-	
0,5	7,25	0,05	210	239,4	215	245,1	225	256,5	-	-	-	-	-	-	-	-	-	-	-	
1	14,5	0,1	330	376,2	340	387,6	350	399	450	513	330	376,2	-	-	-	-	-	-	-	
1,5	21,75	0,15	400	456	400	456	420	478,8	630	718,2	520	592,8	-	-	-	-	-	-	-	
2	29	0,2	540	615,6	550	627	600	684	800	912	700	798	600	684	-	-	-	-	-	
2,5	36,25	0,25	580	661,2	600	684	700	798	950	1083	870	991,8	700	798	600	684	-	-	-	
3	43,5	0,3	680	775,2	700	798	1000	1140	1200	1368	1100	1254	1000	1140	1050	1197	-	-	-	
4	58	0,4	760	866,4	800	912	1250	1425	1500	1710	1350	1539	1230	1402,2	1250	1425	1400	1596	-	
10	145	1	-	-	-	-	-	-	2000	2280	3500	3990	3500	3990	3000	3420	3500	3990	4000	4560
12	174	1,2	-	-	-	-	-	-	2500	2850	4000	4560	4000	4560	3100	3534	4000	4560	4500	5130
19	275,5	1,9	-	-	-	-	-	-	3000	3420	4500	5130	4500	5130	3300	3762	4500	5130	4500	5130
*Values in the table are for AC10 -*Kg/h values are for LPG - *Sm³/h values are for Natural Gas																				

Table 9: ERG-H6 Series 2'' Threaded Capacity Table

To find the flows for other types of gases, the following formula should be used:

Adjustment Factor K at 15ºC	
Butane	0,55
Propene	0,64
Oxygen	0,76
Air	0,78
Nitrogen	0,81
Biogas	0,85
City Gas	1,23
Hydrogen	3,04
LPG	0,62

Condition: +15°C, 1013 mbar,

Q (n)m³/h (Natural Gas) x K = Q (n)m³/h (x Gas)

Example: Q (n)m³/h (Natural Gas) x 0,78 = Q (n)m³/h (Air)

Regulation Spring Table

Regulation Spring		MP Spring Range (mbar)		HP Spring Range (mbar)	
Spring Code	Spring Color	Min.	Max.	Min.	Max.
PDM00006950	Light Green	10	25	-	-
PDM00006951	Black	25	40	-	-
PDM00006952	Blue	40	60	-	-
PDM00006953	Dark Green	60	90	-	-
PDM00006954	White	90	140	-	-
PDM00006955	Yellow	140	180	-	-
PDM00006967	Uncolored	180	240	-	-
PDM00004668	Grey	240	339	-	-
PDM00006956	Orange	-	-	340	700
PDM00006957	Pink	-	-	700	1000
PDM00006958	Brown	-	-	1000	1700
PDM00006777	Red	-	-	1700	4400

Table 10: ERG-H6 Series Regulation Spring Table

OPSO Spring Table

OPSO Springs		Spring Range (mbar)			
Spring Code	Spring Color	MP Spring Range (mbar)		HP Spring Range (mbar)	
		Min.	Max.	Min.	Max.
PDM00002304	Yellow	32	80	-	-
PDM00004252	Orange	80	180	-	-
PDM00003764	Red	180	500	-	-
PDM00004253	Green	-	-	500	700
PDM00004254	Black	-	-	700	1300
PDM00003765	Orange	-	-	1300	2000
PDM00004255	Grey	-	-	2000	3200
PDM00003766	Blue	-	-	3200	5500

Table 11: ERG-H6 OPSO Spring Table

UPSO Spring Table

UPSO Springs		MP Spring Range (mbar)		MP Spring Range (mbar)	
Spring Code	Spring Color	Min.	Max.	Min.	Max.
PDM00007693	Yellow	10	30	-	-
PDM00007694	Orange	30	130	-	-
PDM00003726	Green	130	240	240	700
PDM00003731	Red	-	-	500	1000
PDM00004249	White	-	-	1000	2000
PDM00004250	Blue	-	-	2000	3200

Table 12: ERG-H6 OPSO Spring Table

Relief Spring Table

Relief Springs		Dimensions(mm)			Spring Range (mbar)	
Spring Code	Spring Color	d	Lo	De	LP/MP	HP
PDM00006959	Light Green	2	41	22	25	-
PDM00006963	Orange	2,4	41	22	40	-
PDM00006964	Red	3	41	22	-	280

Table 13: ERG-H6 Series Relief Spring Table

Packaging

Product	Piece	Box Dimensions (LxWxH cm)	Unit Product Weight	Unit Box Weight	Total Box Weight	Total Quantity in Pallet	Total Weight in Pallet
ERG-H6	1	60x33x33	Approx. 18,5 kg	Approx. 1,7 kg	20,2 kg	30	Approximately 630 kg
ERG-HZ6	1	60x33x33	Approx. 17,3 kg	Approx. 1,7 kg	19,0 kg	30	Approximately 600 kg

Table 14: ERG-H6 Series Packing Information

ESKA

ERG-H6
USER MANUAL

This manual is subject to change according to technical developments.

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