

# 133 and 233

## Light Commercial & Commercial Regulator



The 133 and 233 regulators are designed for light commercial and commercial uses such as industries and heating plants, as well as for all installations where accurate pressure control, easy adjustment and fast response times are required, such as for burners, industrial ovens, boilers, etc.

### Description

The 133 and 233 regulators are direct-acting, spring loaded regulators with a built-in safety shut-off device.

A large choice of orifice sizes enables perfect matching of the different flow rates and inlet pressures.

The lever system ensures exact outlet pressure and fast response when the flow rate varies.

The 133 regulator and the flanged versions of the 233 regulators are equipped with a built-in filter (filtration grade 0.5 mm).

### Key Benefits

- » Wide range of interchangeable orifices
- » Can be installed in any position
- » Cartridge-type construction allows easy unit withdrawal without removing body from pipeline
- » Complies with high temperature requirements
- » Approved by German DVGW

### Technical Specifications

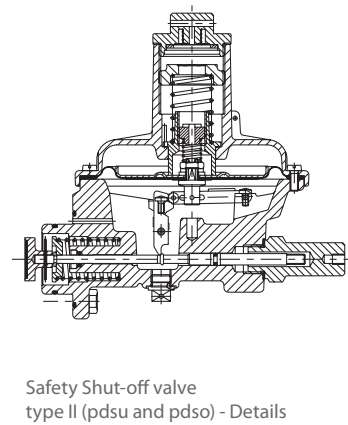
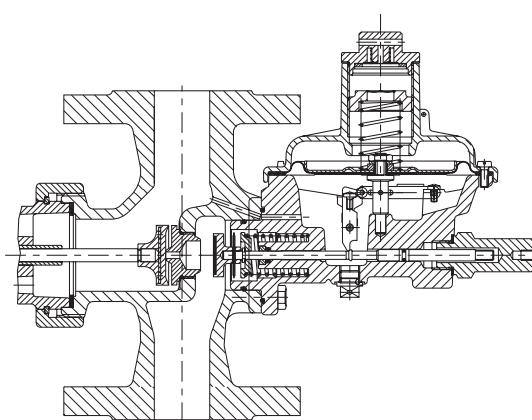
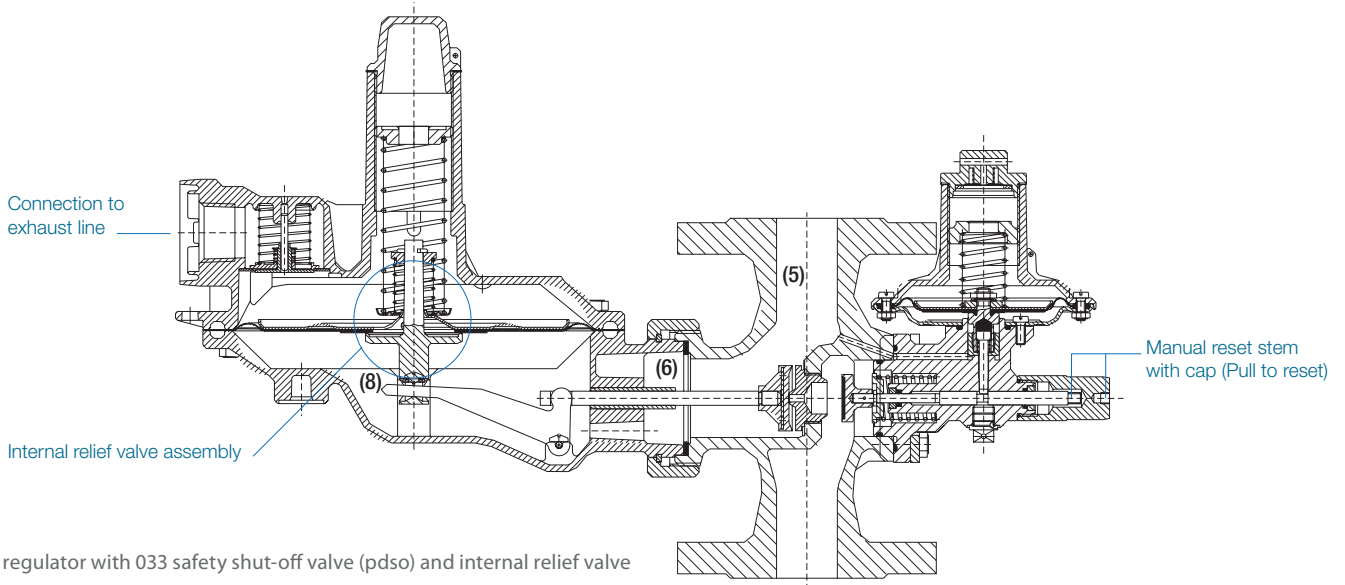
Maximum inlet pressure	8 bar
Outlet pressure	10 mbar - 0.55 bar
Accuracy & lock-up pressure	Up to AC 5 / up to SG 10
Operating temperature	Gas: -20°C to +60°C
Ambient temperature	-30°C to +60°C (body material)
Acceptable gases	Natural gas, propane, butane, air, nitrogen and all non-corrosive gases.
Safety devices	Optional built-in safety shut-off valve: - OPSO: Over-pressure shut-off - UPSO: Under-pressure shut-off
Options	Safety diaphragm - Safety relief valve

### Connections

Sizes	DN 25, DN 40 and DN 50
Dimensions	See table page 2
Flanges	PN16
Thread	Rp 1 - EN 10226-1

### Materials

Body	EN-GJS-400-15 DIN EN 1563
Actuator	Cast aluminium GD-Al Si 12, DIN 1725
SSV actuator	Brass
Internal parts	Brass/Steel, zinc protected
Seals	NBR rubber/Viton
Diaphragm	NBR rubber/NBR rubber, reinforced fabric



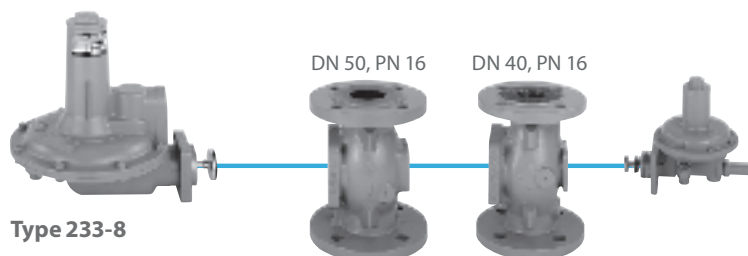
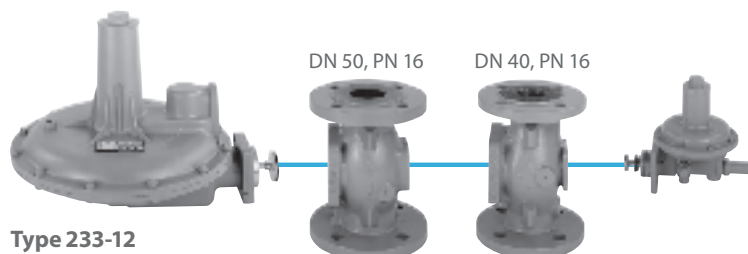
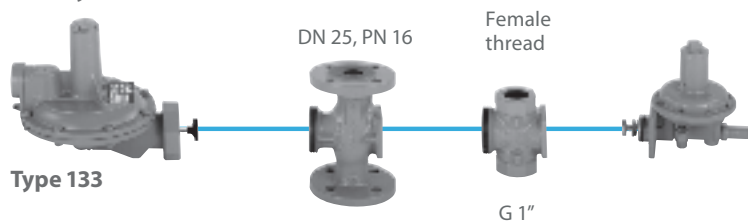
## Body Sizes & Actuator Type

### Selecting the Actuator

Regulator Type	Actuator Type	Set Range (Wds)
133	-	8 - 210 mbar
	HP	140 - 420 mbar
233	-12	8 - 210 mbar
	-8	30 - 550 mbar

133 and 233 are differential strength, tightness-tested regulators.

## Body Sizes



## Special Features

### Gas loss protection:

- » this feature is available on the 133 regulator, where it replaces the UPSO function. In case the outlet pressure drops (to around 50% of the set value), the protection valve closes and interrupts the gas flow. A minimum bleed continues to feed the outlet installation. The protection valve is automatically reset when outlet installations are closed and outlet pressure increases back to the set value.
- » Outlet pressure might drop accidentally due to inlet pressure dropping below specifications, or gas demand exceeding the regulator capacity.

Gas loss protection should not be used when inlet pressure exceeds 1 bar.

### Safety diaphragm:

- » this feature offers protection in case of rupture or leak at the main diaphragm. It limits the gas flow rate coming out through the vent connection to around 30 l/h. When the safety diaphragm is pressurized by a large gas leak from the main diaphragm, the outlet pressure increases by around 50%, and thus triggers the safety shut-off valve (OPSO).

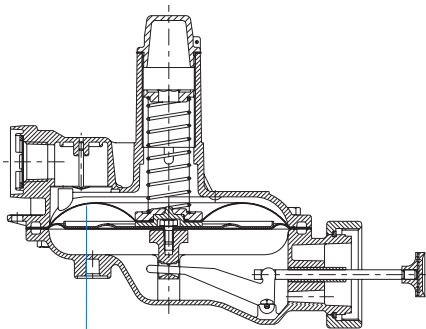
Safety diaphragm should not be used when inlet pressure exceeds 1 bar.

### External control line:

- » 133 and 233 regulators are delivered with an internal control line that optimises the regulator function due to the Venturi effect around the valve disc. However an external control line is recommended in case inlet pressure exceeds 4 bar. In this case, the internal control is removed.

### Relief valve setting:

The standard relief spring setting is 30 mbar above the outlet setting, with an accuracy of 10%.



Design with built-in safety diaphragm

## Safety Shut-off Valve

### Selecting the SSV

Type	Max. operating pressure	Function	Range	
			Wdo	Wdu
033	5 bar	OPSO	40 mbar to 0.45 bar	-
I	8 bar	OPSO	20 mbar to 1.0 bar	-
II	8 bar	OPSO & UPSO	20 mbar to 1.0 bar	8 to 50 mbar

Note that OPSO and UPSO settings are adjustable separately.

### Fire Resistance:

Every shut-off valve is equipped with a temperature fuse that triggers the valve in case of high temperature (around 180 to 200°C).

### DVGW Safety Recommendations:

133 and 123 regulators are approved by the German DVGW under specific conditions concerning German regulations on safety and gas installations:

- » Inlet pressure below 6 bar
- » OPSO and UPSO safety shut-off valve is required when inlet pressure exceeds 5 bar.



Pressure Regulator 133

## Outlet Pressure Range Regulator

Regulator Type	Spring Code	Spring Color	Spring Range
133 with gas loss protection	955-200-08	red	9 - 15 mbar
	955-200-09	blue	14 - 20 mbar
	955-201-06	silver	18 - 26 mbar
	955-202-98	yellow	24 - 40 mbar
	955-200-11	orange	38 - 53 mbar
133	955-200-08	red	8 - 16 mbar
	955-200-09	blue	12 - 20 mbar
	955-200-10	green	15 - 35 mbar
	955-200-11	orange	30 - 70 mbar
	955-200-12	black-white	50 - 140 mbar
	955-200-83	silver	100 - 210 mbar
133 HP	955-200-84	black	140 - 420 mbar
233-12	955-200-13	red	8 - 16 mbar
	955-200-14	blue	12 - 20 mbar
	955-200-15	green	15 - 35 mbar
	955-200-16	orange	30 - 70 mbar
	955-200-17	black	70 - 140 mbar
	955-200-18	metal blank	100 - 210 mbar
233-8	955-200-15	green	30 - 70 mbar
	955-200-16	orange	70 - 140 mbar
	955-200-17	black	140 - 300 mbar
	955-200-18	metal blank	210 - 450 mbar
	955-200-78	green	300-550 mbar

Accuracy class (AC), lock-up pressure class (SG) and lock-up pressure zone (SZ) :

- » 18 - 20 mbar: AC 20 / SG 30
- » 20 - 100\* mbar: AC 10 / SG 20
- » 100\* - 450 mbar: AC 5 / SG 10 - The typical lock-up pressure zone is SZ 5.

\*50 mbar for regulator 133

**Accuracy class (AG):**

» &gt; OPSO: AG 10

**Minimum difference between regulator and SSV settings ( $\Delta P_w$ ):**

» 20 mbar for OPSO

**Accuracy class (AG):**

» OPSO: 20 - 400 mbar: AG 10

0.4 - 1 bar: AG 10

» UPSO: 8 - 20 mbar: AG 30

20 - 50 mbar: AG 10

**Minimum difference between regulator and SSV settings ( $\Delta P_w$ ):**

» 10 mbar for UPSO

» 20 mbar for OPSO

**Standard conditions:**

- Absolute pressure of 1.013 bar
- Temperature of 15°C

The volumes marked in bold are not regulated with the accuracy indicated.

Do not operate the orifice in the inlet pressure areas marked with ●

## Outlet Pressure Range

### Safety Shut-off Valves

#### SSV 033

Over-pressure shut-off (OPSO)	Spring Code	Spring Color	Spring Range
SSV 033	955-200-22	red	40 - 70 mbar
	955-200-23	blue	50 - 150 mbar
	955-200-24	green	140 - 450 mbar

#### SSV I - SSV II

Over-pressure shut-off (OPSO)	Spring Code	Spring Color	Spring Range
SSV I and II	955-200-22	red	20 - 60 mbar
	955-200-23	blue	50 - 120 mbar
	955-200-24	green	100 - 400 mbar
	955-200-52	brown	300 - 600 mbar
	955-202-42	silver	400 - 1000 mbar

Under-pressure shut-off (UPSO)	Spring Code	Spring Color	Spring Range
SSV II	955-200-32	red	8 - 50 mbar

## Flow Capacity

### Regulator Type 133, DN 25

Outlet Pressure Setting	Inlet Pressure (bar)	Capacities at Standard Conditions (m <sup>3</sup> /h)					
		Orifice size					
		12.5 mm (1/2")	10 mm (3/8")	8 mm (5/16")	6.3 mm (1/4")	4.7 mm (3/16")	3 mm (1/8")
20 mbar	0.1	24	17	16	9	●	●
	0.3	40	36	29	22	12	6
	0.5	48	46	40	30	17	8
	1.0	61	56	53	41	25	12
	1.5	●	63	61	56	33	14
	2.0	●	<b>64</b>	<b>63</b>	57	38	18
	3.0	●	●	●	59	51	24
	4.0	●	●	●	<b>64</b>	52	31
	5.0	●	●	●	●	53	35
	6.0	●	●	●	●	<b>54</b>	40
50 mbar	8.0	●	●	●	●	<b>60</b>	<b>50</b>
	0.1	14	13	11	●	●	●
	0.3	31	29	22	16	12	4
	0.5	44	42	37	24	15	8
	1.0	58	52	46	40	24	11
	1.5	●	59	57	54	30	14
	2.0	●	<b>61</b>	<b>60</b>	56	35	16
	3.0	●	●	●	60	48	22
	4.0	●	●	●	<b>65</b>	53	27
	5.0	●	●	●	●	54	30
6.0	●	●	●	●	<b>56</b>	36	
8.0	●	●	●	●	<b>66</b>	<b>50</b>	

# Regulator Type 133, DN 25 (cont'd)

Outlet Pressure Setting	Inlet Pressure (bar)	Capacities at Standard Conditions (m <sup>3</sup> /h)					
		Orifice size					
		12.5 mm (1/2")	10 mm (3/8")	8 mm (5/16")	6.3 mm (1/4")	4.7 mm (3/16")	3 mm (1/8")
100 mbar	0.2	22	18	14	12	8	3
	0.3	33	28	18	16	11	4
	0.5	50	35	28	24	12	8
	1.0	60	52	48	39	23	12
100 mbar	1.5	●	58	56	52	29	13
	2.0	●	<b>60</b>	<b>59</b>	55	34	16
	3.0	●	●	●	60	48	21
	4.0	●	●	●	<b>63</b>	52	25
	5.0	●	●	●	●	60	31
	6.0	●	●	●	●	65	35
	8.0	●	●	●	●	<b>70</b>	50
140 mbar	0.1	●	●	●	●	●	●
	0.3	18	15	12	10	7	3
	0.5	25	21	17	14	10	6
	1.0	44	36	29	22	17	10
	1.5	●	46	38	28	24	13
	2.0	●	<b>53</b>	43	35	29	16
	3.0	●	●	<b>56</b>	47	39	22
	4.0	●	●	●	<b>59</b>	49	26
	5.0	●	●	●	●	55	31
	6.0	●	●	●	●	65	35
300 mbar	0.5	18	15	11	8	6	●
	1.0	35	29	23	16	13	9
	1.5	●	38	33	25	18	12
	2.0	●	<b>46</b>	40	33	25	15
	3.0	●	●	53	43	38	21
	4.0	●	●	<b>66</b>	<b>51</b>	46	26
	5.0	●	●	●	●	55	31
	6.0	●	●	●	●	65	35
400 mbar	0.7	26	22	17	12	10	6
	1.0	33	28	21	17	12	8
	1.5	●	37	31	26	16	10
	2.0	●	<b>44</b>	38	31	23	12
	3.0	●	●	50	41	36	18
	4.0	●	●	<b>64</b>	<b>49</b>	44	24
	5.0	●	●	●	●	53	29
	6.0	●	●	●	●	63	33
8.0	●	●	●	●	<b>77</b>	40	

## Correction factor for non-natural gas applications:

The flow rates are indicated for a 0.6 specific gravity gas. To determine the volumetric flow rate for gases other than natural gas, multiply or calculate the values in the capacity tables using the sizing equations with a correction factor. The table below lists correction factors for some common gases:

Gas type	Specific gravity	Correction factor
Air	1.00	0.77
Butane	2.01	0.55
Carbon dioxide (dry)	1.52	0.63
Carbon monoxide (dry)	0.97	0.79
Natural gas	0.60	1.00
Nitrogen	0.97	0.79
Propane	1.53	0.63
Propane-Air mix	1.20	0.71

*Specific gravity or relative density (air = 1, non-dimensional value)*

Use the following formula to calculate the correction factor for gases not listed above. In the formula, d is the specific gravity of the gas.

$$\text{Correction factor} = \sqrt{\frac{0.6}{d}}$$

## Regulator Type 133, DN 25 With Gas Loss Protection

Outlet Pressure Setting	Inlet Pressure (bar)	Capacities at Standard Conditions (m <sup>3</sup> /h) Orifice size 12.5 mm (1/2")
20 mbar	0.1 bar	13
	0.3 bar	20
	0.5 bar	25
	1.0 bar	32
50 mbar	0.15 bar	14
	0.3 bar	22
	0.5 bar	27
	1.0 bar	34

# Flow Capacity (cont'd)

## Regulator Type 233-12, DN 40

**Standard conditions:**

- Absolute pressure of 1.013 bar
- Temperature of 15°C

The volumes marked in **bold** are not regulated with the accuracy indicated.

**Do not operate the orifice in the inlet pressure areas marked with ●.**

Outlet Pressure Setting	Inlet Pressure (bar)	Capacities at Standard Conditions (m <sup>3</sup> /h)				
		Orifice size & Valve disk angle				
		25 mm (1") 30°	20 mm (3/4") 10°	12.5 mm (1/2") 10°	10 mm (3/8") 10°	6.3 mm (1/4") 10°
20 mbar	0.1	75	58	40	24	12
	0.3	142	114	82	48	23
	0.5	188	149	110	64	32
	1.0	250	208	158	98	47
	1.5	<b>280</b>	241	195	125	57
	2.0	●	260	215	147	68
	3.0	●	300	266	190	92
	4.0	●	<b>310</b>	300	210	113
	5.0	●	●	300	210	113
50 mbar	6.0	●	●	300	250	130
	8.0	●	●	●	<b>250</b>	160
	0.1	51	43	26	20	●
	0.3	125	95	62	43	21
	0.5	169	130	88	58	29
	1.0	250	190	140	95	46
	1.5	<b>286</b>	228	180	120	57
	2.0	●	254	210	140	68
	3.0	●	295	250	190	90
100 mbar	4.0	●	<b>315</b>	280	220	110
	5.0	●	●	300	230	122
	6.0	●	●	300	250	130
	8.0	●	●	●	<b>250</b>	160
	0.2	73	52	38	25	15
	0.3	110	81	54	36	20
	0.5	160	119	79	53	30
	1.0	237	183	136	90	44
	1.5	<b>266</b>	221	168	119	57
200 mbar	2.0	●	258	204	142	65
	3.0	●	290	248	191	87
	4.0	●	<b>319</b>	277	230	109
	5.0	●	●	300	240	124
	6.0	●	●	300	250	130
	8.0	●	●	●	<b>250</b>	160
	0.4	140	107	70	45	22
	0.5	175	134	90	56	27
	1.0	304	224	156	98	43
200 mbar	1.5	<b>355</b>	272	207	127	57
	2.0	●	291	230	142	64
	3.0	●	350	287	190	86
	4.0	●	<b>376</b>	310	230	110
	5.0	●	●	320	250	125
	6.0	●	●	330	260	130
	8.0	●	●	●	<b>260</b>	160

# Regulator Type 233-8, DN 40

Outlet Pressure Setting	Inlet Pressure (bar)	Capacities at Standard Conditions (m³/h)				
		25 mm (1") 30°	20 mm (3/4") 10°	12.5 mm (1/2") 10°	10 mm (3/8") 10°	6.3 mm (1/4") 10°
50 mbar	0.2	75	56	30	19	14
	0.3	105	78	47	30	18
	0.5	142	115	68	46	26
	1.0	235	189	132	90	46
	1.5	<b>262</b>	223	166	118	55
	2.0	●	255	200	147	68
	3.0	●	●	243	190	90
	4.0	●	●	278	232	112
	5.0	●	●	293	254	126
	6.0	●	●	<b>304</b>	270	138
8.0	●	●	●	●	<b>170</b>	
100 mbar	0.3	93	73	41	26	18
	0.5	136	106	65	42	26
	1.0	220	170	114	79	41
	1.5	<b>261</b>	205	149	102	55
	2.0	●	236	180	126	66
	3.0	●	●	231	186	87
	4.0	●	●	263	225	109
	5.0	●	●	<b>285</b>	248	128
	6.0	●	●	<b>300</b>	275	146
8.0	●	●	●	●	<b>178</b>	
200 mbar	0.4	124	96	63	42	23
	0.5	148	118	79	52	27
	1.0	260	198	127	90	46
	1.5	298	252	152	117	58
	2.0	●	296	190	143	70
	3.0	●	●	266	197	89
	4.0	●	●	300	240	112
	5.0	●	●	312	256	131
	6.0	●	●	324	279	146
8.0	●	●	●	●	178	
400 mbar	0.7	152	126	86	61	32
	1.0	220	175	118	80	46
	1.5	<b>277</b>	214	142	107	54
	2.0	●	256	172	130	66
	3.0	●	●	223	167	86
	4.0	●	●	241	176	108
	5.0	●	●	<b>266</b>	206	127
	6.0	●	●	<b>281</b>	217	142
8.0	●	●	●	●	<b>172</b>	

## Correction factor for non-natural gas applications:

The flow rates are indicated for a 0.6 specific gravity gas.

To determine the volumetric flow rate for gases other than natural gas, multiply or calculate the values in the capacity tables using the sizing equations with a correction factor.

The table below lists correction factors for some common gases:

Gas type	Specific gravity	Correction factor
Air	1.00	0.77
Butane	2.01	0.55
Carbon dioxide (dry)	1.52	0.63
Carbon monoxide (dry)	0.97	0.79
Natural gas	0.60	1.00
Nitrogen	0.97	0.79
Propane	1.53	0.63
Propane-Air mix	1.20	0.71

*Specific gravity or relative density (air = 1, non-dimensional value)*

Use the following formula to calculate the correction factor for gases not listed above. In the formula, d is the specific gravity of the gas.

$$\text{Correction factor} = \sqrt{\frac{0.6}{d}}$$

# Flow Capacity (cont'd)

## Regulator Type 233-12, DN 50

**Standard conditions:**

- Absolute pressure of 1.013 bar
- Temperature of 15°C

The volumes marked in **bold** are not regulated with the accuracy indicated.

**Do not operate the orifice in the inlet pressure areas marked with ●.**

Outlet Pressure Setting	Inlet Pressure (bar)	Capacities at Standard Conditions (m³/h)					
		Orifice size & Valve disk angle					
		25 mm (1") 30°	20 mm (3/4") 30°	20 mm (3/4") 10°	12.5 mm (1/2") 10°	10 mm (3/8") 10°	6.3 mm (1/4") 10°
20 mbar	0.1	97	74	66	41	25	12
	0.3	214	180	142	79	50	23
	0.5	288	250	187	119	69	30
	1.0	385	360	267	182	106	46
	1.5	<b>425</b>	400	292	230	128	57
	2.0	●	410	317	255	153	68
	3.0	●	●	362	324	205	86
	4.0	●	●	<b>394</b>	340	240	105
	5.0	●	●	●	<b>350</b>	264	118
	6.0	●	●	●	<b>362</b>	288	130
50 mbar	0.1	66	52	45	31	20	●
	0.3	165	130	110	65	43	22
	0.5	245	200	157	97	60	29
	1.0	387	320	240	163	98	45
	1.5	<b>421</b>	390	287	219	127	55
	2.0	●	410	317	255	152	66
	3.0	●	●	365	312	205	89
	4.0	●	●	<b>394</b>	340	240	110
	5.0	●	●	●	<b>350</b>	264	123
	6.0	●	●	●	<b>362</b>	288	214
100 mbar	0.2	95	65	60	40	30	14
	0.3	160	117	105	65	44	21
	0.5	241	178	155	97	62	29
	1.0	380	307	260	162	98	45
	1.5	<b>446</b>	379	326	216	126	57
	2.0	●	410	376	255	153	69
	3.0	●	●	420	320	205	91
	4.0	●	●	<b>430</b>	375	240	110
	5.0	●	●	●	<b>390</b>	270	125
	6.0	●	●	●	<b>405</b>	300	140
200 mbar	0.4	165	125	110	70	45	25
	0.5	204	150	133	83	55	30
	1.0	320	248	221	149	97	45
	1.5	<b>371</b>	310	267	198	126	57
	2.0	●	360	305	230	152	71
	3.0	●	●	360	200	205	91
	4.0	●	●	<b>400</b>	320	240	110
	5.0	●	●	●	<b>330</b>	265	125
	6.0	●	●	●	<b>350</b>	300	140
	8.0	●	●	●	●	<b>310</b>	16



# Regulator Type 233-8, DN 50

Outlet Pressure Setting	Inlet Pressure (bar)	Capacities at Standard Conditions (m³/h) Orifice size & Valve disk angle					
		25 mm (1") 30°	20 mm (3/4") 30°	20 mm (3/4") 10°	12.5 mm (1/2") 10°	10 mm (3/8") 10°	6.3 mm (1/4") 10°
50 mbar	0.2	75	60	48	34	22	14
	0.3	122	83	71	52	33	20
	0.5	187	148	117	74	49	28
	1.0	321	266	208	151	104	45
	1.5	<b>352</b>	320	240	190	129	55
	2.0	●	370	270	231	155	66
	3.0	●	●	●	300	208	94
	4.0	●	●	●	340	236	117
	5.0	●	●	●	<b>349</b>	259	130
	6.0	●	●	●	<b>358</b>	281	141
100 mbar	0.3	94	78	75	45	28	20
	0.5	137	116	108	70	42	28
	1.0	<b>293</b>	241	189	122	83	46
	2.0	<b>342</b>	401	270	208	134	66
	3.0	●	●	●	281	189	92
	4.0	●	●	●	317	237	113
	5.0	●	●	●	<b>340</b>	251	131
	6.0	●	●	●	<b>356</b>	270	146
200 mbar	0.4	115	95	88	55	38	22
	0.5	154	120	116	69	48	27
	1.0	293	241	198	127	93	45
	1.5	<b>363</b>	343	252	181	121	57
	2.0	●	414	296	228	147	69
	3.0	●	●	●	304	199	95
	4.0	●	●	●	350	231	117
	5.0	●	●	●	<b>378</b>	262	139
	6.0	●	●	●	<b>392</b>	284	150
400 mbar	0.7	160	123	110	81	62	29
	1.0	221	165	153	113	82	40
	1.5	<b>294</b>	216	191	142	110	54
	2.0	●	274	231	170	128	66
	3.0	●	●	●	226	167	91
	4.0	●	●	●	252	200	112
	5.0	●	●	●	<b>278</b>	232	133
	6.0	●	●	●	<b>295</b>	255	150
8.0	●	●	●	●	●	<b>183</b>	

## Correction factor for non-natural gas applications:

The flow rates are indicated for a 0.6 specific gravity gas. To determine the volumetric flow rate for gases other than natural gas, multiply or calculate the values in the capacity tables using the sizing equations with a correction factor.

The table below lists correction factors for some common gases:

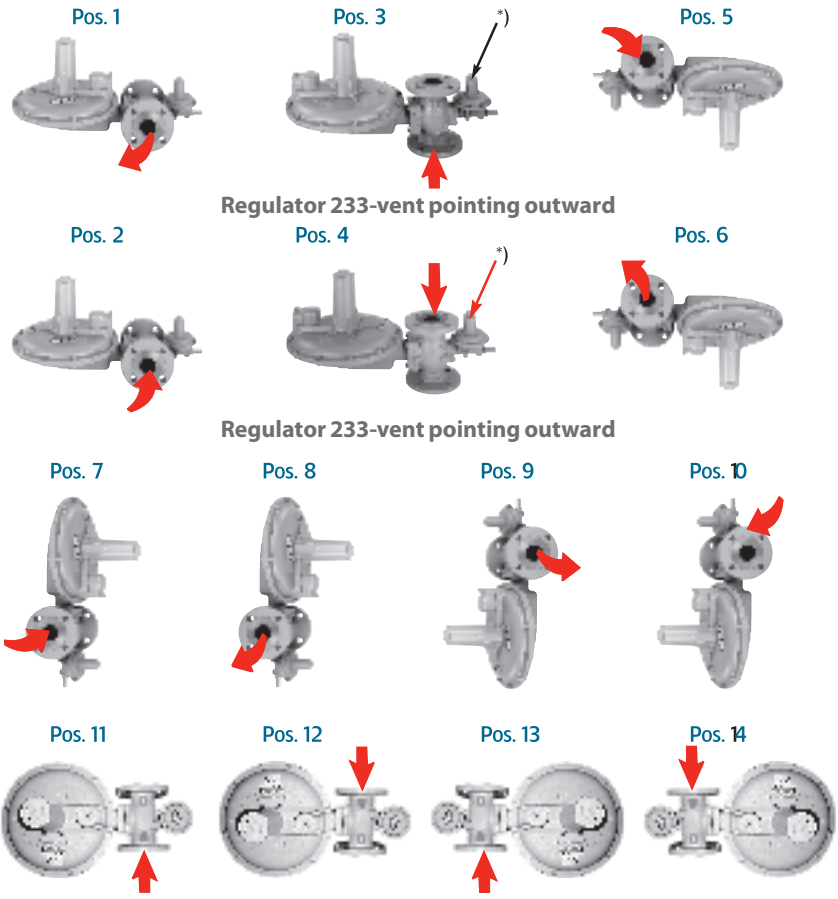
Gas type	Specific gravity	Correction factor
Air	1.00	0.77
Butane	2.01	0.55
Carbon dioxide (dry)	1.52	0.63
Carbon monoxide (dry)	0.97	0.79
Natural gas	0.60	1.00
Nitrogen	0.97	0.79
Propane	1.53	0.63
Propane-Air mix	1.20	0.71

*Specific gravity or relative density (air = 1, non-dimensional value)*

Use the following formula to calculate the correction factor for gases not listed above. In the formula, d is the specific gravity of the gas.

$$\text{Correction factor} = \sqrt{\frac{0.6}{d}}$$

## Assembly Position



Regulator 233-vent pointing outward

Regulator 233-vent pointing outward

Pos.3 and Pos.4 are not possible for the DN 50 flanged version of regulator 233, when fitted with type 033 SSV.

Please indicate the desired assembly position when you order. If not otherwise stated, the regulators are assembled and adjusted for normal installation (position 2):

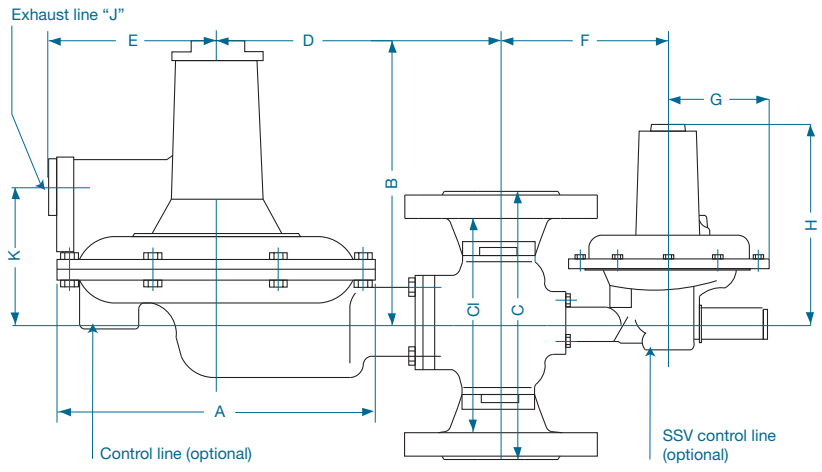
- » Regulator 133-vent pointing outward
- » Regulator 233-vent pointing inward

## Installation

- » Diaphragm casing can be mounted in any position relative to the body through a full 360° angle.
- » For OUTDOOR installations, position the vent so that rain, snow, moisture, or foreign particles cannot enter the vent opening. Note: Actaris Gas recommends that the vent be positioned to face downward to avoid entry of water or other matter interfering with the proper operation of the regulator. The vent should be located away from building eaves, window openings, building air intakes, and above the expected snow level at the site. The vent opening should be inspected periodically to ensure that it does not become blocked by foreign material.
- » For INDOOR installations, pipe the vent to the outside atmosphere using the shortest length of pipe, the least number of elbows and with a pipe diameter as follows: up to 3 m length: DN 20 - up to 5 m length: DN 25 - above 5 m length: at least DN 40. The outlet end of the pipe must be protected from moisture and the entrance of foreign particles.
- » Under German DVGW rules, it is not necessary to pipe the vent for an indoor installation, when the regulator is fitted with a safety diaphragm and the inlet pressure does not exceed 1 bar.

## Dimensions (mm)

Model	Thread	Flange	A	B	C'	C	D	E	F	G	H	J Exhaust Connection	K	Weight in kg (approx.)	
														(1)	(2)
133-	1"	DN 25	190	155	100	160	170	100	100	75	120	Rp 3/4	74	4	6
233-12	•	DN 40	350	250	•	200	265	155	115	75	120	Rp 1	110	11	15
233-12	•	DN 50	350	250	•	200	265	155	115	75	120	Rp 1	110	•	16
233-8	•	DN 40	260	250	•	200	220	125	115	75	120	Rp 1	105	9	13
233-8	•	DN 50	260	250	•	200	220	125	115	75	120	Rp 1	105	•	14



In case of external control lines (optional), the regulator is provided with the following fittings:

- » Regulator 133: G1/4, Ermeto 12,
- » Regulator 233: G1/2, Ermeto 12,
- » SSV: G1/8, Ermeto 6%.

# Type Designation

XX- 133 233		XX-	X-	XXX-	Variant Type
		8			
		12			
					n Max. inlet pressure (see brochure)
				31	Without safety devices
				32	SRV
				34	Gas loss protection*
				36	Gas loss protection* and SRV
					<b>With type I or II SSV</b>
				61	OPSO
				62	OPSO and SRV
				64	OPSO and UPSO
				66	OPSO, UPSO and SRV
				630	OPSO and safety diaphragm
				650	OPSO, UPSO and safety diaphragm
					<b>With type 033 SSV</b>
				71	OPSO
				72	OPSO and SRV
				77	OPSO, gas loss protection* and SRV
				730	OPSO and safety diaphragm
				770	OPSO, gas loss protection* and safety diaphragm

## Information to be specified when ordering:

- » Regulator type code
- » Body size and connections
- » Minimum and maximum inlet pressures
- » Outlet pressure range
- » Outlet pressure setting
  - » OPSO setting\*
  - » UPSO setting\*

\*(if requested)

\*Available only on 133 regulator

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