

Honeywell

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GAS PRESSURE REGULATOR HON 5020

Reliability and accuracy

The HON 5020 provides outstanding control accuracy over a large working area as well as quick reaction times for highly dynamic requirements in the public gas supply industry or industrial applications.

The HON 5020 gas pressure regulator meets the demands of modern control technology:

- *Reduced operating costs*
- *Increased efficiency*
- *Meets specific operational needs*
- *Improved reliability in all situations*




Process optimization plays an increasingly important role in today's gas industry. To reduce operating costs, gas pressure regulators and safety shut-off valves need to provide reliability, longer lifespans and lower maintenance costs. This compact device is the ideal solution for all types of control tasks that require reliability, precision and easy maintenance.

Benefit from:fitieren sie von:

- Optimized design for lower maintenance costs
- Small number of moving parts
- Modular design
- High response and control accuracy
- Reduced noise
- High flow rate
- Low differential pressure requirements



Technical data				
Device parameter	inlet/outlet		(Valve) flow coefficient KG* in (m ³ /h)/bar	
			Without SSV	With SSV
HON 5020 with DN _U =DN _d (without expansion)	DN 25 / DN 25		450	410
	DN 50 / DN 50		1800	1500
	DN 80 / DN 80		4690	3700
	DN 100 / DN 100		7900	5500
	DN 150 / DN 150		18200	11500
Connection type: GS cast steel housing	DIN flanges PN 16, PN 25, PN 40, Class 150, Class 300 and Class 600 according to ANSI 16.5			
Throttle plates	100%, 75%, 50%, 25% capacity			
Noise reduction	Up to 20 dB(A) DN 25 and DN 50 -10% of the stated KG value DN 80, DN 100 and DN 150 -25% of the stated KG value			
Accuracy class and closing pressure category	p _d -range		Accuracy class AC	Closing pressure category SG
	0.02 bar - 0.03 bar		10	30
HON 625	> 0.03 bar - 2.5 bar		5	10
	> 2.5 bar - 5 bar		1	10
	0.3 - 1 bar		20	30
HON 630	> 1 - 3 bar		5	10
	> 3 - 5 bar		5	10
	> 5 - 40 bar		2.5	10
	0.3 - 1 bar		**20	30
HON 630-1	> 1 - 3 bar		20	30
	> 3 - 5 bar		10	20
	> 5 - 40 bar		5	10
	Closing pressure zone category		SZ 2.5	
Ambient and operating temperature range (DIN EN 334)	Category 2: -20 °C to +60 °C			
Strength, tightness and function	EN 334 and EN 14382 standards			
EX - protection	The mechanical components do not contain any potential sources of ignition or hot surfaces and therefore do not fall within the scope of ATEX 95 (94/9/EC). The electronic accessories meet the ATEX requirements.			
CE marking according to PED standards				

*) for natural gas with $d = 0.64$ ($\rho_n = 0.83 \text{ kg/m}^3$) and $t_U = 15 \text{ °C}$ gas inlet temperature

***) when $\Delta p_U < 8 \text{ bar}$

TECHNICAL DATA				
Max. permitted pressure PS	16 bar/25 bar integral pressure-resistant (IS) 40 bar/100 bar integral pressure-resistant (IS) (depending on flange or pilot system)			
	Setpoint spring			
Pilot HON 625	Spring no.	Wire Ø in mm	Colour code	Specific range W_{ds}
LP measuring element	1	2.5	Cream white	0.02 bar to 0.06 bar
	2	3.5	Green	0.04 bar to 0.18 bar
	3	4	Red	0.07 bar to 0.35 bar
	4	5	Blue	0.3 bar to 0.5 bar
HP measuring element	5	4	Red	0.3 bar to 1 bar
	6	5	Blue	0.5 bar to 2 bar
	7	5.5	No colour	1 bar to 3.5 bar
	8	6	Silver	2 bar to 5 bar
Pilot HON 630 (external pilot, two-stage design)	Spring no.	Wire Ø in mm	Colour code	Specific range W_{ds}
	0	4.5	Black	0.3 to 1
	1	3.6	Blue	0.5 to 2
	2	5.6	Yellow	1 to 5
	3	6.3	Brown	2 to 10
	4	7	Red	5 to 20
Load limiting stage		5	Green	5 to 15
				Automatic via p_d
Pilot HON 630-1 (external pilot, one-stage design, suitable for input pressure fluctuations < 15 bar)	Spring no.	Wire Ø in mm	Colour code	Specific range W_{ds}
	0	4.5	Black	0.3 to 1
	1	3.6	Blue	0.5 to 2
	2	5.6	Yellow	1 to 5
	3	6.3	Brown	2 to 10
	4	7	Red	5 to 20
	5	8	Green	10 to 40
	7	9	White	20 to 90 bar*
Minimum pressure drop Δp_{min}	Difference between input and outlet $\geq \Delta p$ 0.5 bar			
Material				
Final controlling device (housing)	GS cast steel			
Final controlling device (interior components)	Steel / Al alloy			
Pilot	Steel / Al alloy			
SSV control device	Steel / Al alloy			
Diaphragms	Rubber-like plastic (HNBR)			
Seals	Rubber-like plastic (NBR)			

*) Metal bellow measuring element



Safety shut-off valve inserts

SETTING RANGES OF SSV CONTROL MACHINES FOR FINAL CONTROLLING DEVICES WITH AN INTEGRATED SSV (DN 50/100 TO DN 100/200)

Control device	Setpoint spring			Upper response pressure p_{do}		Lower response pressure p_{du}		Response pressure category**
	No.	Colour	Wire-Ø in mm	Specific adjustment range W_{dso} (bar)	Smallest difference between response pressure and normal operating pressure Δp_{wo} (bar)	Specific adjustment range W_{dsu} (bar)	Smallest difference between response pressure and normal operating pressure Δp_{wu} (bar)	
K1a***	1	Yellow	2.50	0.5 ... 0.10	0.030			10 / 5.
	2	Light red	3.20	0.08... 0.25	0.050			10 / 5.
	3	Dark red	3.60	0.20... 0.50	0.100			5 / 2.5
	4	White	4.75	0.40... 1.50	0.250			5 / 2.5
	5	Light blue	1.10			0.010... 0.015	0.012	20
	6	White	1.20			0.014... 0.040	0.030	10 / 5.0
	7	Black	1.40			0.035... 0.120	0.060	5
K2a/1***	1	Light red	3.20	0.40... 0.80	0.100			10 / 5.0
	2	Dark red	3.60	0.60... 1.60	0.200			10 / 5.0
	3	White	4.75	1.50... 4.50	0.300			5 / 2.5
	4	Light blue	1.10			0.060... 0.150	0.050	10 / 5.0
	5	Black	1.40			0.120... 0.400	0.080	5
K2a/2***	3	White	4.75	2.50... 8.00	0.500			10 / 5.0
	6	Red	2.25			0.800... 2.200	0.400	10 / 5.0
K10a	1	Yellow	2.5	0.05... 0.1	0.03			10/5
	2	Light red	3.2	0.08... 0.25	0.05			10/5
	3	Dark red	3.6	0.2... 0.5	0.1			5/2.5
	4	White	4.8	0.4... 1.5	0.25			5/2.5
	5	Light blue	1.20			0.01... 0.015	0.012	20
	6	White	1.40			0.014... 0.04	0.03	20/5
	7	Black				0.035... 0.12	0.06	5
K11a/1	1	Light red	3.20	0.4... 0.8	0.100			10 / 5.0
	2	Dark red	3.60	0.6... 1.6	0.200			10 / 5.0
	3	White	4.75	1.5... 4.5	0.300			5 / 2.5
	4	Light blue	1.10			0.060... 0.150	0.050	20 / 5.0
	5	Black	1.40			0.120... 0.400	0.080	5
	6	Flame red	2.25			0.350... 1.000	0.100	5
K11a/2	3	White	4.75	2.5... 8.0	0.500			10 / 5.0
	6	Red	2.25			0.800... 2.200	0.400	20 / 5.0
K16 ¹	0	***Blue	3.20	0.8... 1.5	0.100			2.5
	1	Black	4.50	1.0... 5.0	0.200			2.5 / 1.0
	2	Grey	5.00	2.0... 10	0.400			1
	3	Brown	6.30	5.0... 20	0.800			1
	4	Red	7.0	10... 40	1.200			1
K17 ¹	2	Grey	5.00			2... 10	0.400	1
	3	Brown	6.30			5... 20	0.800	1
	4	Red	7.00			10... 40	1.200	1
K18 ¹	1		9.00	20... 90	1.500			1
K19 ¹	1		9.00			20... 90	1.500	1

*) Please note: If control devices are used for upper and lower response pressures at the same time, the difference between the two nominal values p_{do} and p_{du} must be at least 10% larger than the sum of the values Δp_{wo} and Δp_{wu} : $p_{dso} - p_{dsu} \geq 1.1 \times (\Delta p_{wo} + \Delta p_{wu})$

**) The higher AG category applies for the first half of the adjustment range, and the lower AG category applies to the second half.

***) only DN 25/25

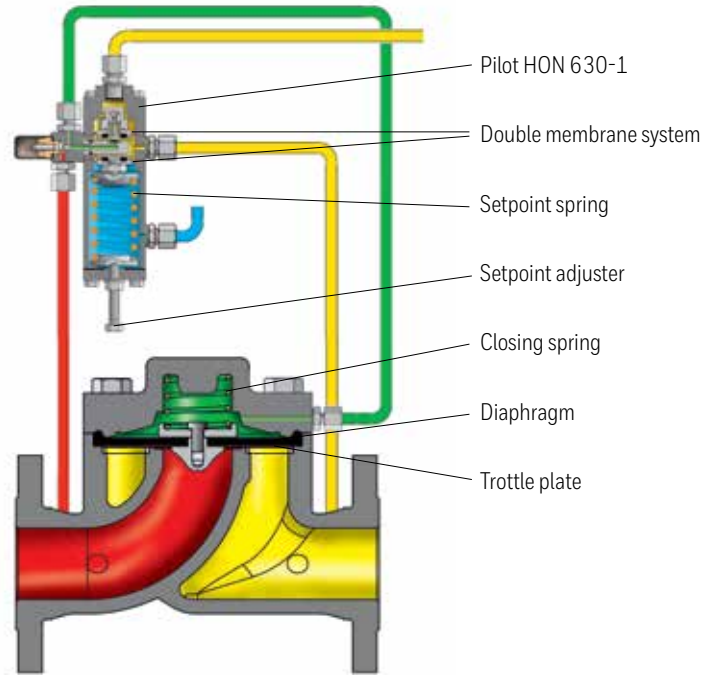
1) The control devices K16/K17 or K18/K19 can also be used together.

Design and operation

The HON 5020 gas pressure regulator keeps the outlet pressure of a gaseous medium in a controlled system constant, regardless of variables such as input pressure and/or flow rate.

The HON 5020 consists of the main valve, the pilot, and if included, the integrated safety shut-off valve (SSV). The external pilots of the 600er series (e.g. HON 630/HON 625) are connected to the main appliance via control lines. A fine filter prevents the pilot from becoming contaminated.

The actuator consists of only a small number of parts and is therefore easy to maintain. The top of the housing can be easily removed to check the throttle diaphragm (the only wear part in the final controlling device) without disconnecting the actuator housing.

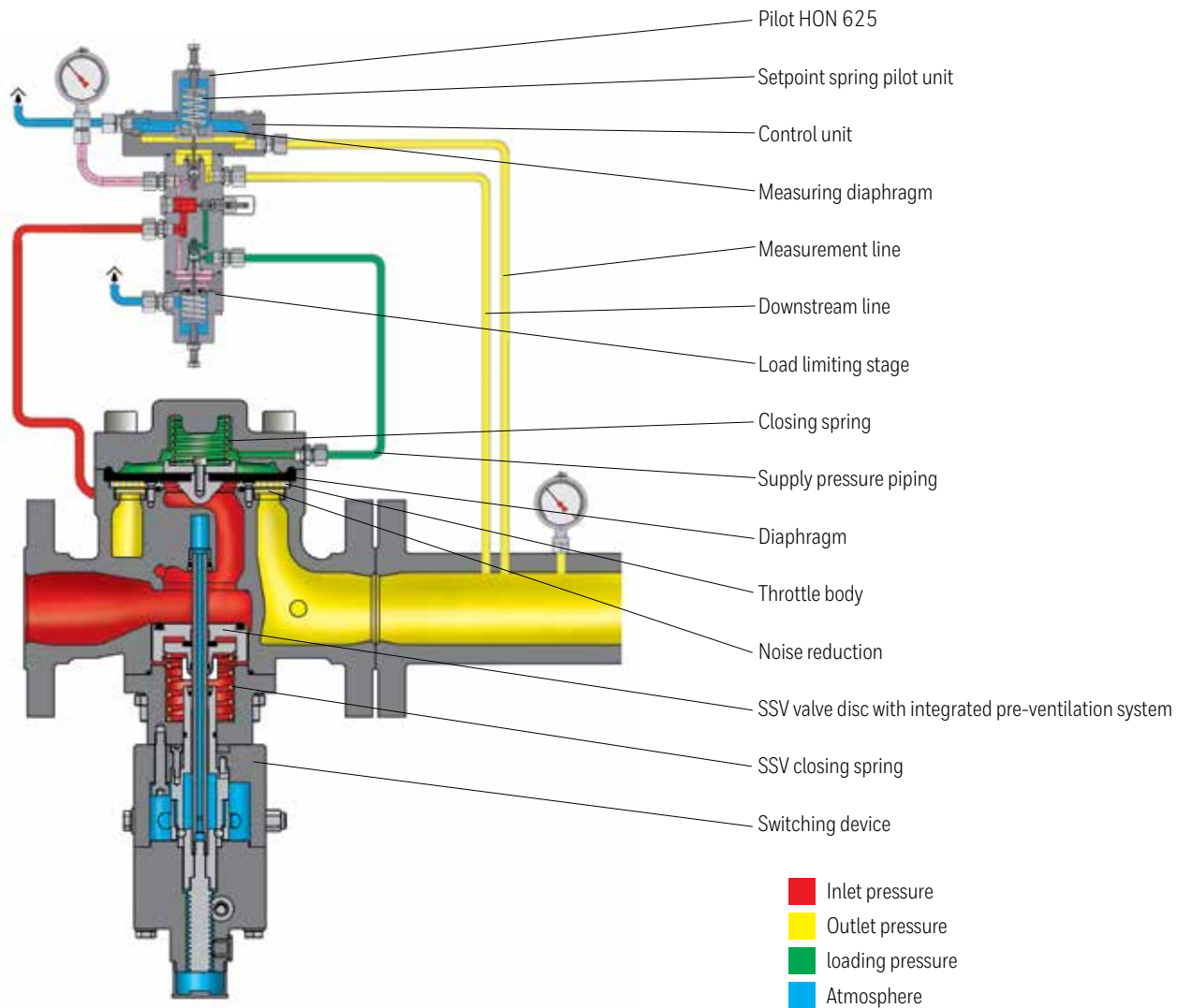


Example HON 5020 without SSV with pilot HON 630-1



In case the regulator is equipped with a safety valve, the SSV function unit can also be removed from the actuator housing by loosening the corresponding screws. The actuator is designed as a diaphragm valve. The diaphragm rests on the throttle valve with its orifices. The seal is located next to these orifices. A closing spring generates the closing force required for zero flow.

A metal foam ring can be placed under the throttle valve to reduce noise.



Example HON 5020 with integrated SSV and pilot HON 625

The outlet pressure is sent to the Pilot via the measurement line. The load limiting stage provides a constant pressure to the control unit. The diaphragm system in the control unit measures the actual value of the outlet pressure as a force on the measuring diaphragm and compares it with the force of setpoint spring. If the two values are not the same, the opening position of the throttle diaphragm is changed by adjusting the loading pressure (the outlet pressure adjusts to the target value). By using a diaphragm constructions as an actuator, the HON 5020 remains stable even at very low flow rates.

The device seals automatically when there is no load.

The SSV consists of an actuator with a built-in pressure compensation valve, a switching device and a control unit.

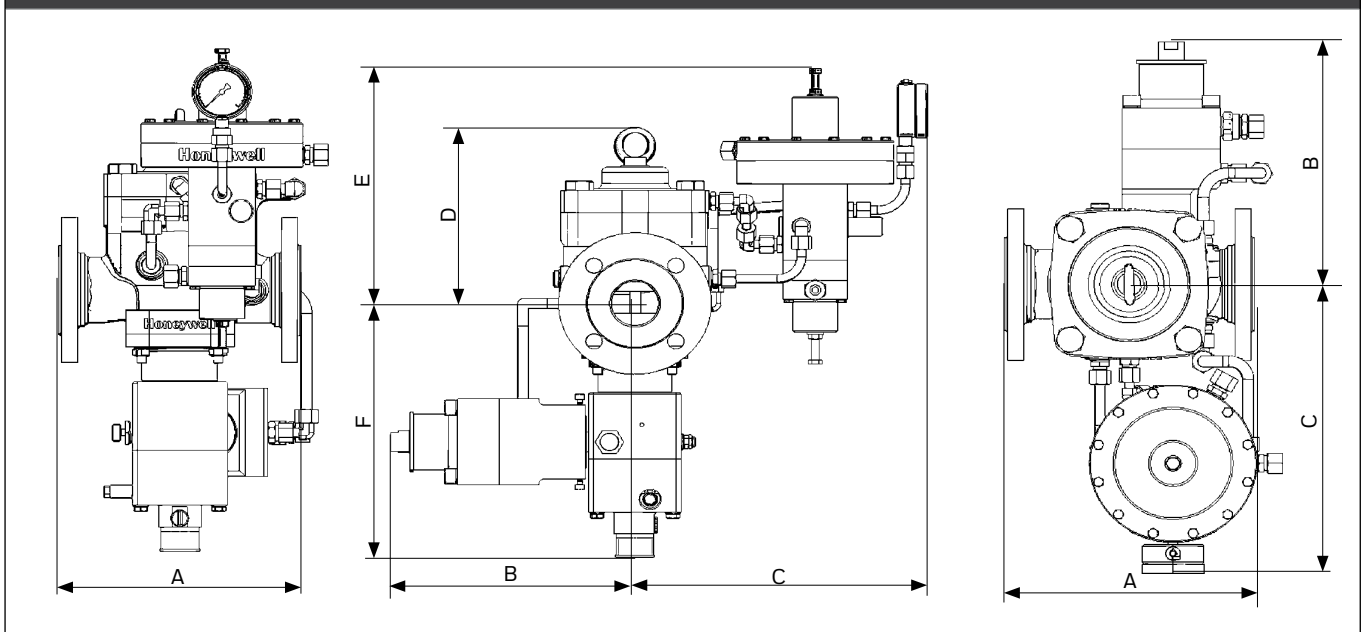
The control units have spring-loaded comparators that can be adjusted for upper and lower cut-off pressures. The safety shut-off valve (SSV) on the input side closes automatically when the pressure exceeds or falls below the set response pressure.

A description of the functions, configurations and re-engagement procedures can be found in the brochures of the SSV control devices.



Throttle body with 100%, 75%, 50% and 25% flow rate.

Dimensions and weights HON 5020 with SSV

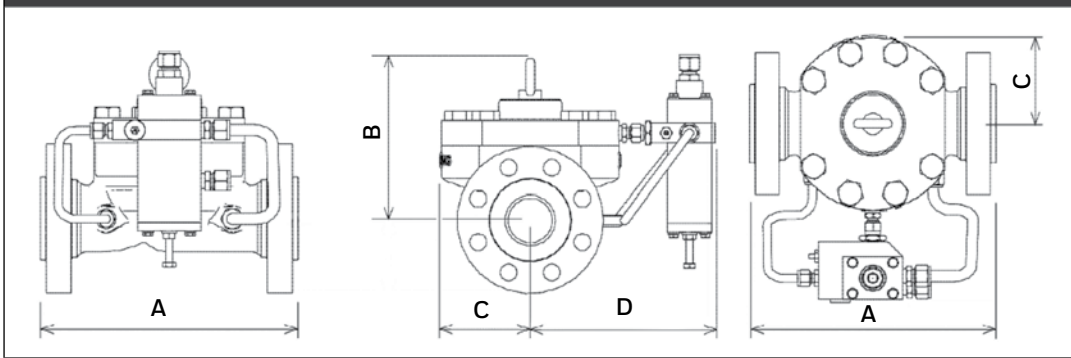


HON 5020 dimensions and weights (with SSV)

Nominal diameter	Pressure rating	A	B	C*	D	E	F	Weight Max. kg
DN 25	PN16	184	200	250	164	300	130	25
	PN25	197	200	250	164	300	130	26
	PN40	197	200	250	164	300	130	26
	cl150	184	200	250	164	300	130	26
	cl300	197	200	250	164	300	130	26
DN 50	cl600	210	200	250	164	300	130	28
	PN16	254	265	315	182	280	300	42
	PN25	267	265	315	182	280	300	43
	PN40	267	265	315	182	280	300	43
	cl150	254	265	315	182	280	300	43
DN 80	cl300	267	265	315	182	280	300	43
	cl600	286	265	315	182	280	300	48
	PN16	298	265	315	230	260	320	66
	PN25	317	265	315	230	260	320	67
	PN40	317	265	315	230	260	320	68
DN 100	cl150	298	265	315	230	260	320	64
	cl300	317	265	315	230	260	320	67
	cl600	337	265	315	230	260	320	74
	PN16	352	265	390	270	300	300	84
	PN25	368	265	390	270	300	300	88
DN 150	PN40	368	265	390	270	300	300	88
	cl150	352	265	390	270	300	300	87
	cl300	368	265	390	270	300	300	95
	cl600	394	265	390	270	300	300	107
	PN16	451	510	430	301	640	205	278
DN 150	PN25	473	510	430	297	640	205	281
	PN40	473	510	430	297	640	205	281
	cl150	451	510	430	301	640	205	280
	cl300	473	510	430	297	640	205	282
	cl600	508	510	430	302	640	205	286

*) Dimensions depend on pilot system

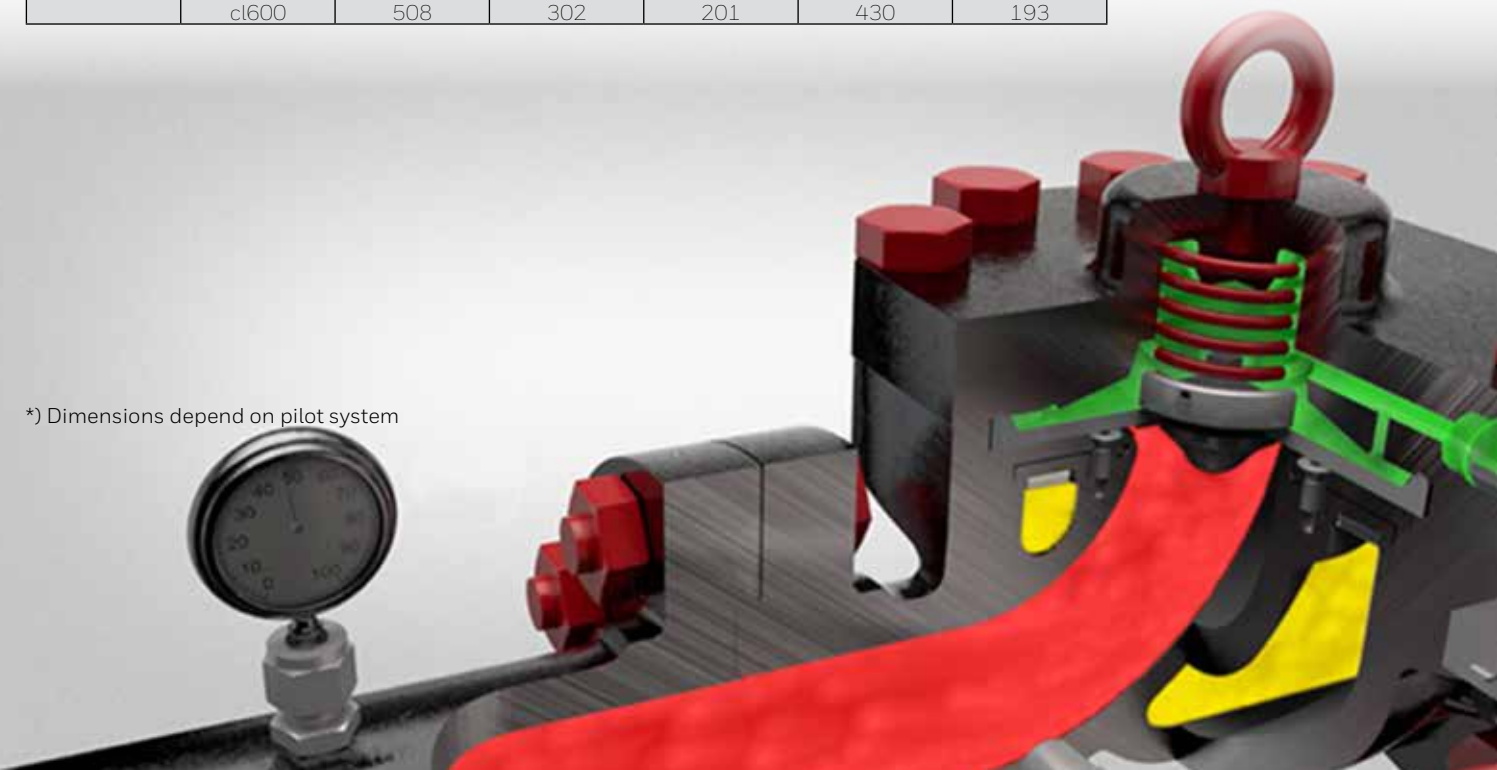
HON 5020 dimensions and weight (without SSV)



HON 5020 dimensions and weight (without SSV)

Nominal diameter	Pressure rating	A	B	C	D*	Weight Max. kg
DN 25	PN16	184	164	72	250	14
	PN25	197	164	72	250	15
	PN40	197	164	72	250	15
	cl150	184	164	72	250	15
	cl300	197	164	72	250	15
DN 50	cl600	210	164	72	250	15
	PN16	254	190	83	315	22
	PN25	267	190	83	315	24
	PN40	267	190	83	315	24
	cl150	254	190	83	315	22
DN 80	cl300	267	190	83	315	24
	cl600	286	190	83	315	29
	PN16	298	240	100	315	43
	PN25	317	240	100	315	48
	PN40	317	240	100	315	48
DN 100	cl150	298	240	100	315	43
	cl300	317	240	100	315	48
	cl600	337	240	100	315	67
	PN16	352	270	145	390	69
	PN25	368	270	145	390	77
DN 150	PN40	368	270	145	390	77
	cl150	352	270	145	390	69
	cl300	368	270	145	390	77
	cl600	394	270	145	390	93
	PN16	451	301	192	430	130
DN 150	PN25	473	297	192	430	147
	PN40	473	297	192	430	147
	cl150	451	301	192	430	130
	cl300	473	297	192	430	147
	cl600	508	302	201	430	193

*) Dimensions depend on pilot system



For more information

To learn more about Honeywell's Advanced Gas Solutions, visit www.honeywellprocess.com or contact your Honeywell account manager.

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