

810 SERIES

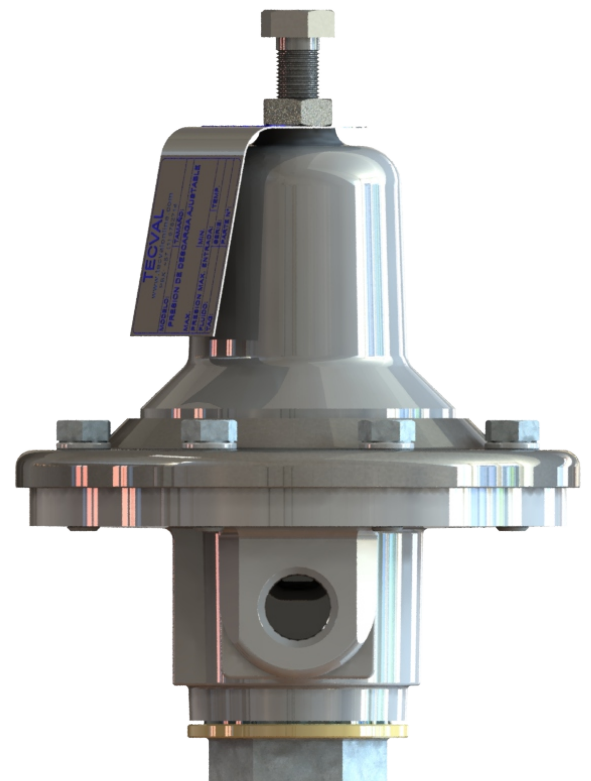
PRESSURE REDUCING VALVE





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810 SERIES - APPLICATION

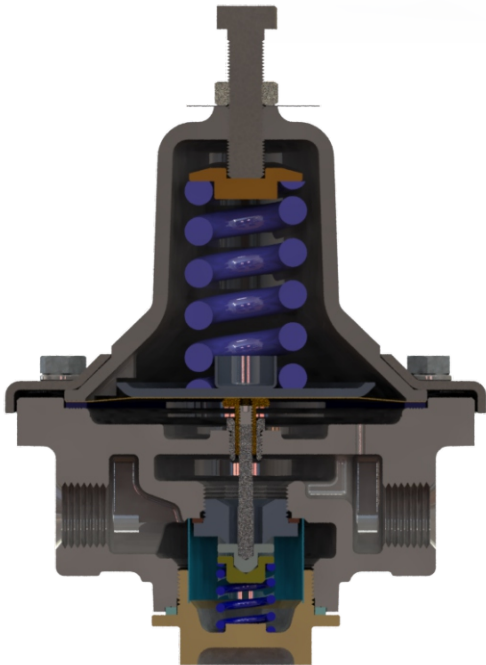
The direct acting pressure reducing valves 810 series is ideal for pressure control in low-capacity equipment.

ADVANTAGES

Design and engineering

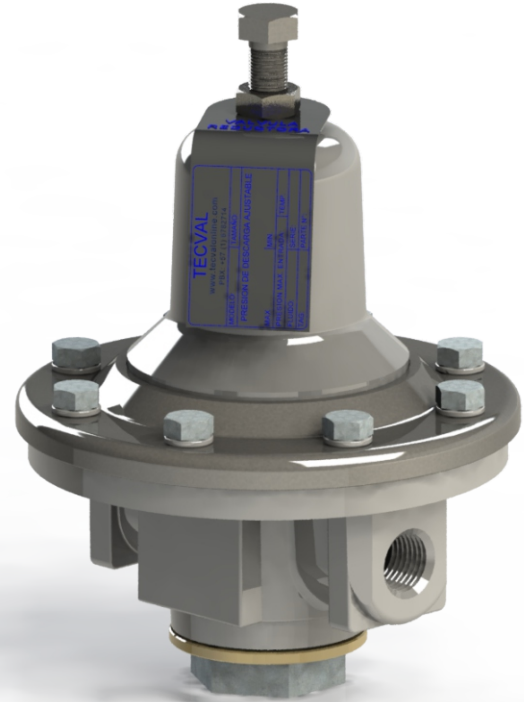
✚ Greater flow capacity when compared to similar designs.

✚ Excellent sealing thanks to a pivoting disc placed against the seat, which guarantees class IV sealing (FCI-70.2) or higher.



Quality

Hydrostatic and individual sealing tests, in addition to mechanical and metallographic tests to ensure product quality. Test certificates are delivered with the product and registered in TECVAL's asset management system for proper traceability

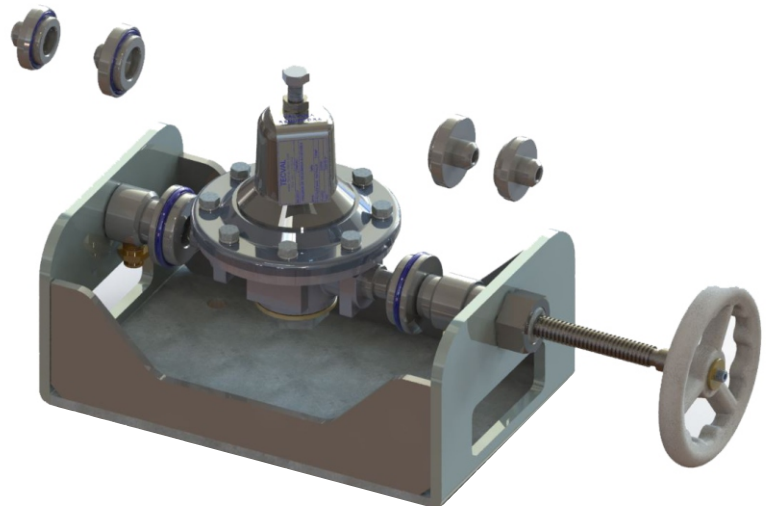


Durability

✚ Stainless steel disc and nozzle for greater durability.

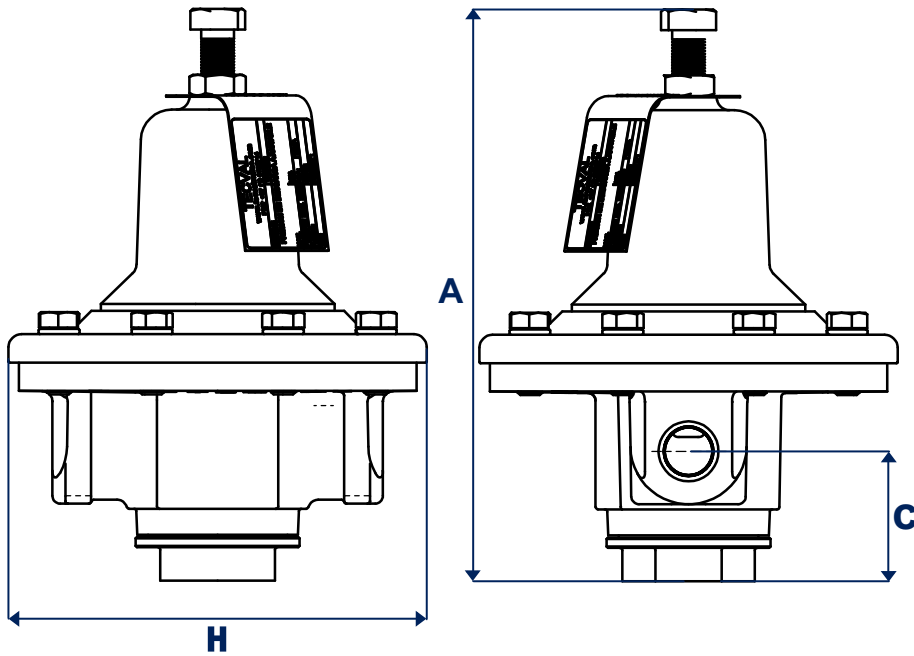
✚ The valve includes a filter that prevents the entry of particles that could deteriorate the seal.

✚ Heat resistant metal diaphragm.



810 SERIES PRESSURE REDUCING VALVE

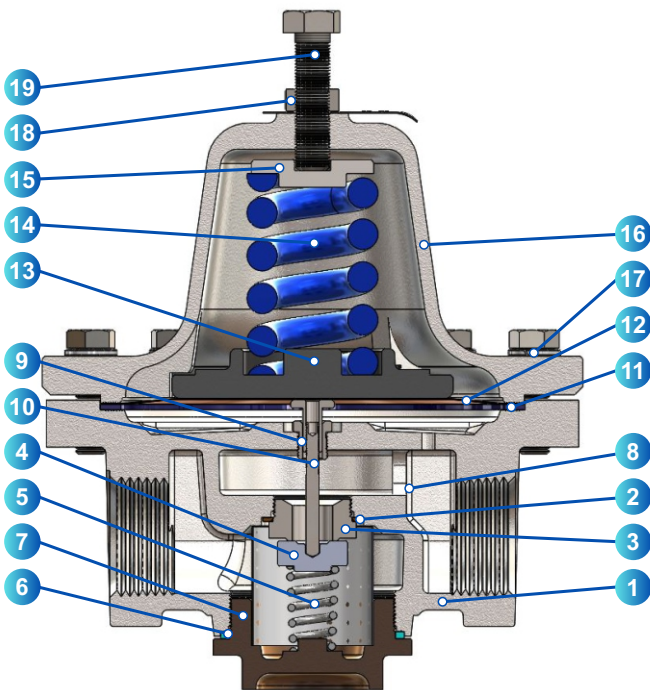
DIMENSIONS



Valve size	Dimensions			Weight
	A	B	C	
1/2" y 3/4"	222	128	49	5.40
1" y 1 1/4"	246	148	55	9.80
1 1/2" y 2"	357	167	73	20.42

*Dimension in millimeters (mm) and weight in kilograms (kg)

CONSTRUCTION MATERIALS

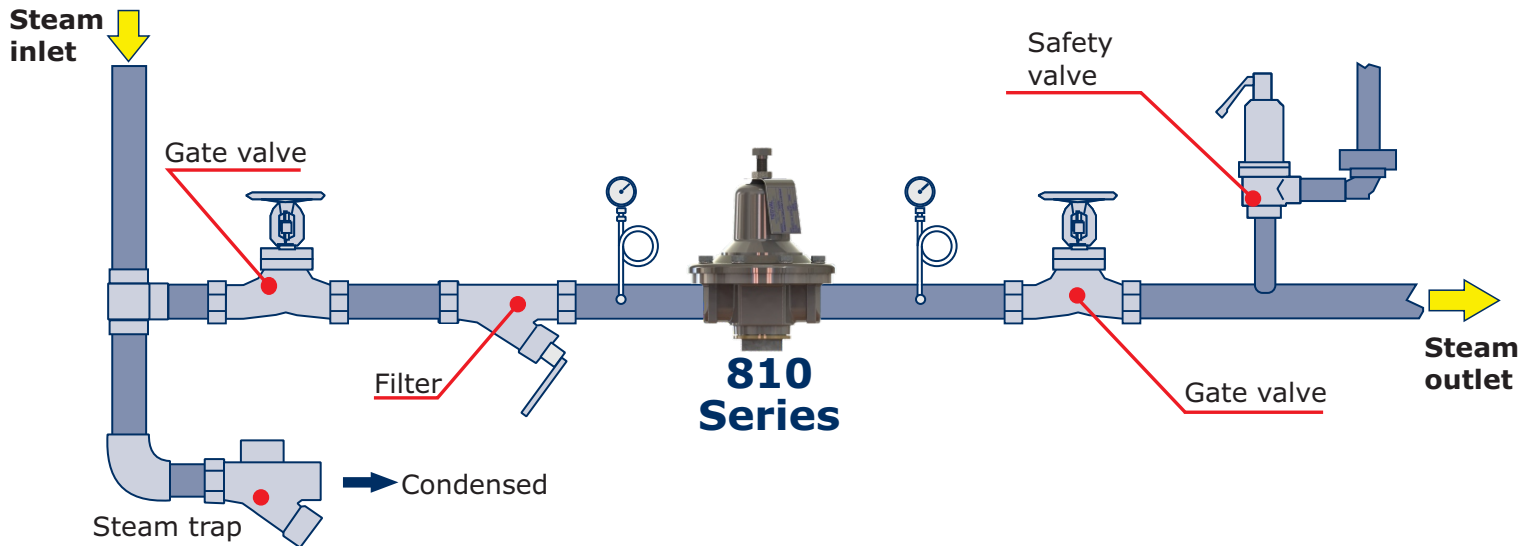


Item	Q.	Description	Material
1	1	Body*	ASTM A126 Class B
2	1	Nozzle ring	Phosphor bronze
3	1	Nozzle	AISI 304 stainless steel
4	1	Disc	AISI 420 stainless steel
5	1	Bottom spring	AISI 302 stainless steel
6	1	Bottom gasket	Silicone
7	1	Bottom nut	Cast bronze
8	1	Filter	Stainless steel mesh
9	1	Guide	AISI 304 stainless steel
10	1	Stem	AISI 304 stainless steel
11	1	Bonnet body gasket	Reinforced pure graphite
12	2	Diaphragm	Phosphor bronze
13	1	Pressure plate	Steel
14	1	Upper spring	AISI 1070 steel
15	1	Sheave	1045 Steel
16	1	Bonnet	ASTM A126 Class B
17	Var.	Lock Washer	Steel
18	1	Locknut	Steel
19	1	Compression screw	Steel

*For different operating conditions, stainless steel and/or carbon steel body upon request.

INSTALLATION

The installation of TECVAL direct acting pressure reducing Series 810 valves is described below.



ORDER CODE

To identify the proper valve, use the following guide:

810 — **050** — **CI** — **C** — **0**

Valve size		Body material		Spring					Seat type	
NPS	Code	Material	Code	Size PSIG	1/2"	3/4"	1" y 1 1/4"	1 1/2" y 2"	Material	Code
1/2"	050	ASTM A126*	CI	3-15	K	K	K	K	Metal - Metal	0
3/4"	075			10-30	S	S	S	—	Teflon (PTFE)	1
1"	100			10-40	—	—	—	R		
1 1/4"	125			25-60	C	C	C	C		
1 1/2"	150			55-80	Y	Y	Y	—		
2"	200			55-100	G	G	G	G		
				75-140	B	B	B	—		

* Stainless steel and/or carbon steel body upon request .

SELECTION

To properly size an 810 series reducing valve, please follow the example below:

For example A 45 psig equipment requires a pressure reducing valve to reduce the inlet pressure from 125 psig to 30 psig, while consuming 600 lb/hr of steam. Select the appropriate valve size so that the closing pressure does not exceed 40 psig and provides the required capacity at the regulated pressure

Subcritical flow $P_2 > .58 P_1$	Critical flow $P_2 \leq .58 P_1$
Saturated steam	
$C_v = \frac{W}{2.1\sqrt{\Delta P(P_1 + P_2)}}$	$C_v = \frac{W}{1.71P_1}$
Superheated steam	
$C_v = \frac{W(1 + .0007T_{SH})}{2.1\sqrt{\Delta P(P_1 + P_2)}}$	$C_v = \frac{W(1 + .0007T_{SH})}{1.75P_1}$

Conventions

ΔP = Pressure drop ($P_1 - P_2$)	T_{SH} = Temperature ($^{\circ}F$)
P_1 = Inlet pressure (psia)	W = Steam flow (lbs/hr)
P_2 = Outlet pressure (psia)	$Psia$ = psi + 14.7

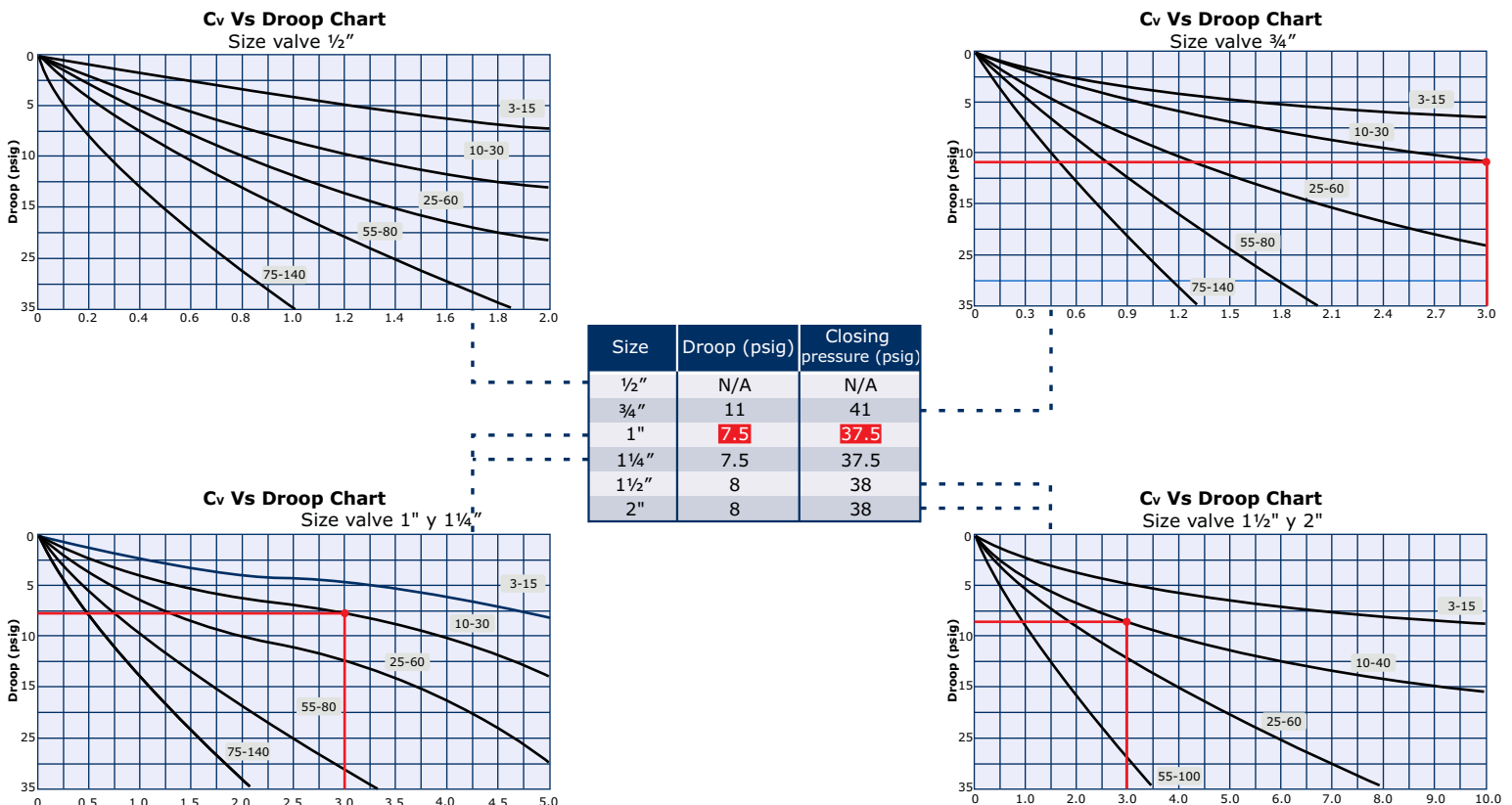
Step 1 Calculate the required Cv as shown below. Make sure to identify whether the application has critical or subcritical flow:

$$P1 = 125 + 14.7 = 139.7 \quad , \quad C_v = \frac{W}{1.71 \times P1} = \frac{600}{1.71 \times 139.4}$$

Step 2 Apply a 1.2 safety factor to the calculated Cv value:

$$C_v \text{ Required} = 1.2 \times 2.5 = 3.0$$

Step 3 Select the spring range that comprises the regulated pressure and minimizes the closing differential pressure (droop). In this case, the 10-30 spring range curve indicates that the smallest valve to meet these conditions is the 1" reducing valve.



DISCHARGE CAPACITIES

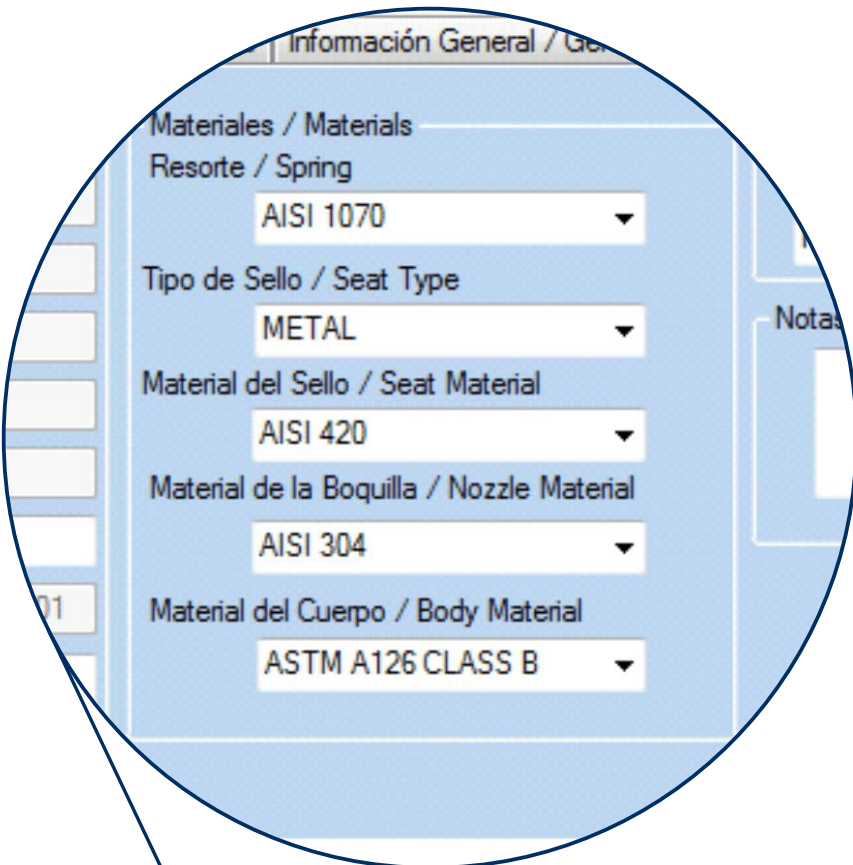
Direct acting pressure reducing valves open when the downstream pressure drops below the closing pressure. This pressure drop is known as "droop".

The following table shows flow capacities based on inlet pressure, outlet pressure, and the selected droop value.

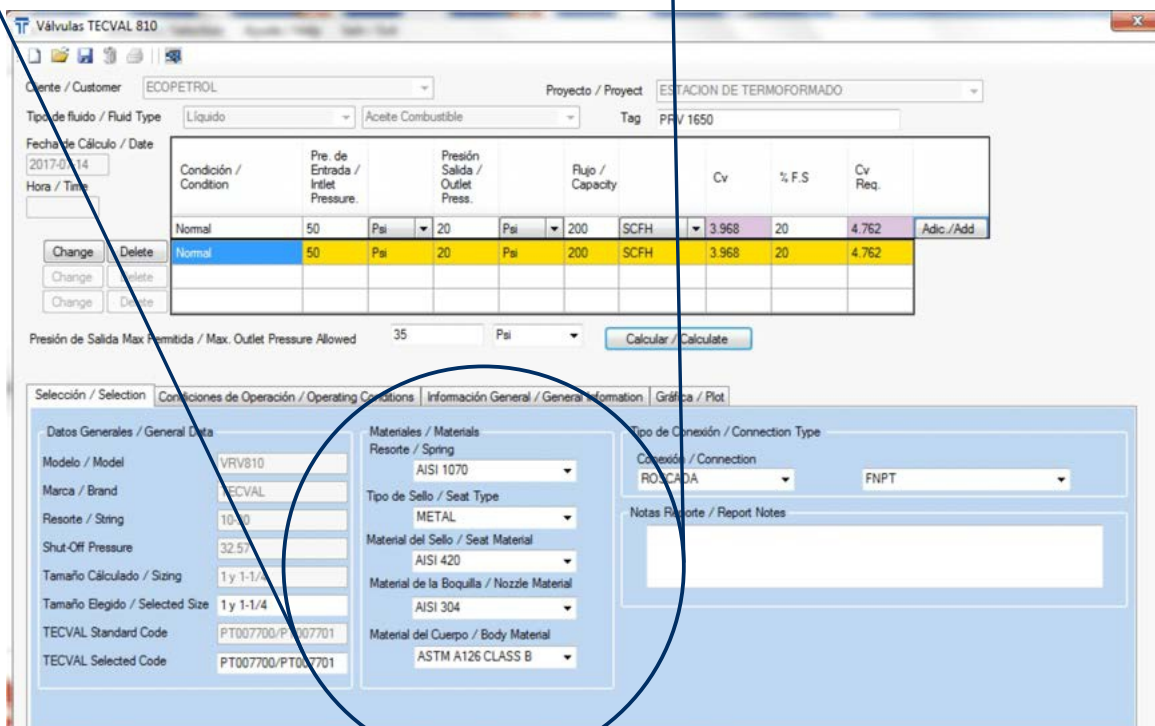
DISCHARGE CAPACITY (Lb/H)																				
Size	Spring range (PSI)	Maximum outlet pressure (PSI)	50 Inlet pressure			75 Inlet pressure			100 Inlet pressure			125 Inlet pressure			150 Inlet pressure					
			DROOP (PSI)			DROOP (PSI)			DROOP (PSI)			DROOP (PSI)			DROOP (PSI)					
			5	10	15	5	10	20	10	15	25	15	20	30	15	20	35			
1/2"	3 - 15	5	144					184												
		10	144					184												
		15	144					184												
	10 - 30	20	55	138				77	192								245			
		25	55	138				77	192								245			
		30	55	138				77	192								245			
	25 - 60	40	61	89		155		84	123	291	157	275			334	454		394	535	
		50						84	123	291	157	275			334	454		394	535	
		60						84	123	291	157	275			334	454		394	535	
	55 - 80	60						38	89	178	114	186	275	227	277	389	268	327	521	
		70						38	89	178	114	186	275	227	277	389	268	327	521	
		80									114	186	275	227	277	389	268	327	521	
	75 - 140	90									53	96	147	117	143	208	138	169	282	
		110												117	143	208	138	169	282	
140																138	169	282		
3/4"	3 - 15	5	177					245												
		10	177					245												
		15	177					245												
	10 - 30	20	111	282				153	391										500	
		25	111	282				153	391										500	
		30	111	282				153	391										500	
	25 - 60	40	55	122		221		77	169	391		216	392			478	609		563	718
		50						77	169	391		216	392			478	609		563	718
		60						77	169	391		216	392			478	609		563	718
	55 - 80	60						54	110	204	141	216	304	263	318	430	310	375	563	
		70						54	110	204	141	216	304	263	318	430	310	375	563	
		80									141	216	304	263	318	430	310	375	563	
	75 - 140	90									69	141	235	172	203	275	203	239	372	
		110												172	203	275	203	239	372	
140																203	239	372		
1" - 1 1/4"	3 - 15	5	360					499												
		10	360					499												
		15	360					499												
	10 - 30	20	144	443				199	614											785
		25	144	443				199	614											785
		30	144	443				199	614											785
	25 - 60	40	83	221		415		115	307	652	392	736	912	896	1015			1056	1197	
		50						115	307	652	392	736	912	896	1015			1056	1197	
		60						115	307	652	392	736	912	896	1015			1056	1197	
	55 - 80	60						61	153	322	196	343	490	418	502	669	493	591	929	
		70						61	153	322	196	343	490	418	502	669	493	591	929	
		80									196	343	490	418	502	669	493	591	929	
	75 - 140	90									127	226	314	275	311	430	324	366	591	
		110												275	311	430	324	366	591	
140																324	366	591		
1 1/2" - 2"	3 - 15	5	332					460												
		10	332					460												
		15	332					460												
	10 - 30	20	144	443		996		199	614			785	1765			2150				2535
		25	144	443		996		199	614			785	1765			2150				2535
		30	144	443		996		199	614			785	1765			2150				2535
	25 - 60	40	83	249		443		115	345	736	441	785	1177	956	1147	1672	1127	1352	2253	
		50						115	345	736	441	785	1177	956	1147	1672	1127	1352	2253	
		60						115	345	736	441	785	1177	956	1147	1672	1127	1352	2253	
	55 - 100	60						77	169	345	216	353	432	430	537	741	507	634	986	
		70						77	169	345	216	353	432	430	537	741	507	634	986	
		80									216	353	432	430	537	741	507	634	986	

For example For a sterilizer operating at 40 psig (maximum outlet pressure), select an 810 series regulating valve with a 100 psig inlet pressure and a required flow rate of 210 lb/hs, with a maximum droop of 10 psig. Determine valve size and spring range. Start by selecting the 100 psig inlet pressure and through a 10 psig droop, move across the column until you find a capacity greater than 210 lb/hs with a 40 psig outlet pressure. Then, move to the left to identify the proper valve spring size and range. **The sterilizer requires an 810 series 3/4" regulating valve with a spring range of 25-60 psig.**

-sizing SOFTWARE



TECVAL's sizing software ensures adequate selection according to pressure, temperature, flow and other process requirements.





We are Operational Reliability

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