



A-T Controls, Inc.

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www.atcontrols.com

Engineer: CMB **No.:** DI00007
Date Created: 12/17/2014
Date Modified: 11/30/2020

Steam Service

Steam is an invisible gas unless condensed in cooler air. Steam has many industrial uses like heating and cooling applications and because of its expanding nature, for generating power. Forms of steam include saturated, superheated, and supercritical. Caution needs to be used when selecting valves for steam service to assure the application temperature and pressure are met with the right valve body and valve trim materials.

Saturated Steam: Steam that exists as both liquid water and water vapor. This form of steam occurs when the steam is at its boiling point at a particular pressure and temperature. The temperature and pressure of the steam determines the amount of each phase of water. Tables showing saturated steam properties for both psig and psia pressures is shown on the next page.

Superheated Steam: Water heated above its boiling point that exists only as water vapor. This occurs when saturated steam is held at a constant pressure and heated to a temperature above its boiling point. The water bubbles have been removed from the steam system.

Super Critical Steam: Steam that does not solely behave as a liquid or gas. This occurs around 1049 °F at 3200 psig.

Standard Material

Please consult A-T Controls for material selections for your application. These parameters are guidelines, and customers are responsible for materials of construction and lubricants that are compatible with their steam application:

Auxiliary Stem Seal: Graphite, RTFE, TFM™-1600, 50/50 STFE, STFM

Body: Carbon Steel, 316 SST, others

Seats:

Ball Valves: PTFE, RTFE, 50/50 STFE, TFM™-1600, STFM, Metal Seats

Butterfly Valves: G2TFE, 50/50 STFE, STFM

50/50 STFE or STFM seats are recommended for soft seated valves

Trim: 316 SST, 17-4 PH®, Stellite, others

Valve Packages

Power-Seal High Performance Butterfly Valves- Sizes: 2"-24" (larger sizes available upon request), ANSI/ASME Class 150# and 300# Lug and Wafer, Blow out proof stem design.

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Series FD9- 150#, 300#, 600# Direct Mount Split Body Flanged Ball Valve, Firesafe, 316SST or WCB, multiple sizes available.

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Series F8R/F83- Sizes ¼"-2-1/2", Full Port and Regular Port 1500/2000 psi WOG (by size), 316 SST or Carbon Steel Body, Threaded, Socket Weld, or Butt Weld.

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Series M- Sizes ½"-8", High Performance Metal Seat Ball Valve Class 150/300/600 Flanged and Threaded/Socket Weld/Butt Weld end connections, Anti-static device, ISO 5211 Mounting Pad, Firesafe API 607 4th edition.

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Manual and Automated Quarter Turn Valves
Complete Valve and Damper Automation





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Saturated Steam Temperature/Pressure	
Temperature (°F)	Pressure (psig)
266.76	25
297.65	50
320.04	75
337.88	100
352.873	125
365.88	150
377.41	175
387.81	200
397.30	225
406.05	250
414.2	275
421.78	300

Saturated Steam Temperature/Pressure	
Temperature (°F)	Pressure (psia)
212	14.70
221	17.52
230	20.78
239	24.52
248	28.79
257	33.66
266	39.17
275	45.40
284	52.40
293	60.25
302	69.01
311	78.77
320	89.60
329	101.60
338	114.83
347	129.37
356	145.34
365	162.83
374	181.94
383	202.73
392	225.36
401	249.90



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