



# A-T Controls, Inc.

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## Ethanol Production

Ethanol is produced in a four step process. First, the feedstock is milled and water, enzymes, and other components are added to convert the feedstock to glucose sugar. Mash is created from this mixture. Next, yeast is then added to the mash to start the fermentation process. After fermentation is complete, beer and distiller grains are left and other solids are removed. The distiller grains are then removed from the water/ethanol mixture and sold, and the water/ethanol mixture is sent to distillation. Distillation uses heat and the volatility of water and ethanol to achieve a 95% ethanol mixture. Molecular sieves are then used to further separate the mixture to become about a 98.5% ethanol mixture. Denaturing of the high concentration of ethanol by adding gasoline helps producers avoid liquor taxation.

## Ethanol Valve Assembly Characteristics

Bacteria can contaminate yeast in the fermentation process. The cleaning chemicals/cleaning process requires process piping to be stainless steel (316L, CF3M). More acidic lines use Alloy 20 (cast CN7M). RTFE and other variations of PTFE are the preferred soft seat. In some cases, utility lines like water, gasses, and steam can use Carbon Steel, however the majority remain stainless steel. Pneumatic actuators are the most common type of actuator for automated assemblies, however electric actuators are preferred for damper drives.

Please consult A-T Controls for material selection for your ethanol application. These parameters are guidelines, and customers are responsible for materials of construction, preparation of the valves for service, and lubricants being compatible with their ethanol application.

## Valve Packages (*Others Available*)

**Series 88-** Sizes ¼"-4", ISO 5211 mounting, Threaded, Socket Weld or Butt Weld, Anti-Static Device  
2000/1500/1000 WOG (by size)  
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**V Series Control Port-** Sizes ½"-4" (up to 6" with FVD9), 3-piece design (V7, V8) or 150#/300# flanged (V9 and FVD9), ISO 5211 mounting, 30°, 60°, and 90° "V" notch design standard (other designs available on request)  
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**Series 55-** Sizes ¼"-4", ISO 5211 mounting, Threaded, Socket Weld or Butt Weld 3-piece design, 1000/800 WOG (by size)  
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**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. Soft seat, Firesafe, and Metal seat designs  
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**Series 90/93-** Sizes 1/2"-12", ANSI Class 150, ISO 5211 Mounting, available in stainless steel, carbon steel, and Alloy 20  
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Manual and Automated Quarter Turn Valves  
Complete Valve and Damper Automation

