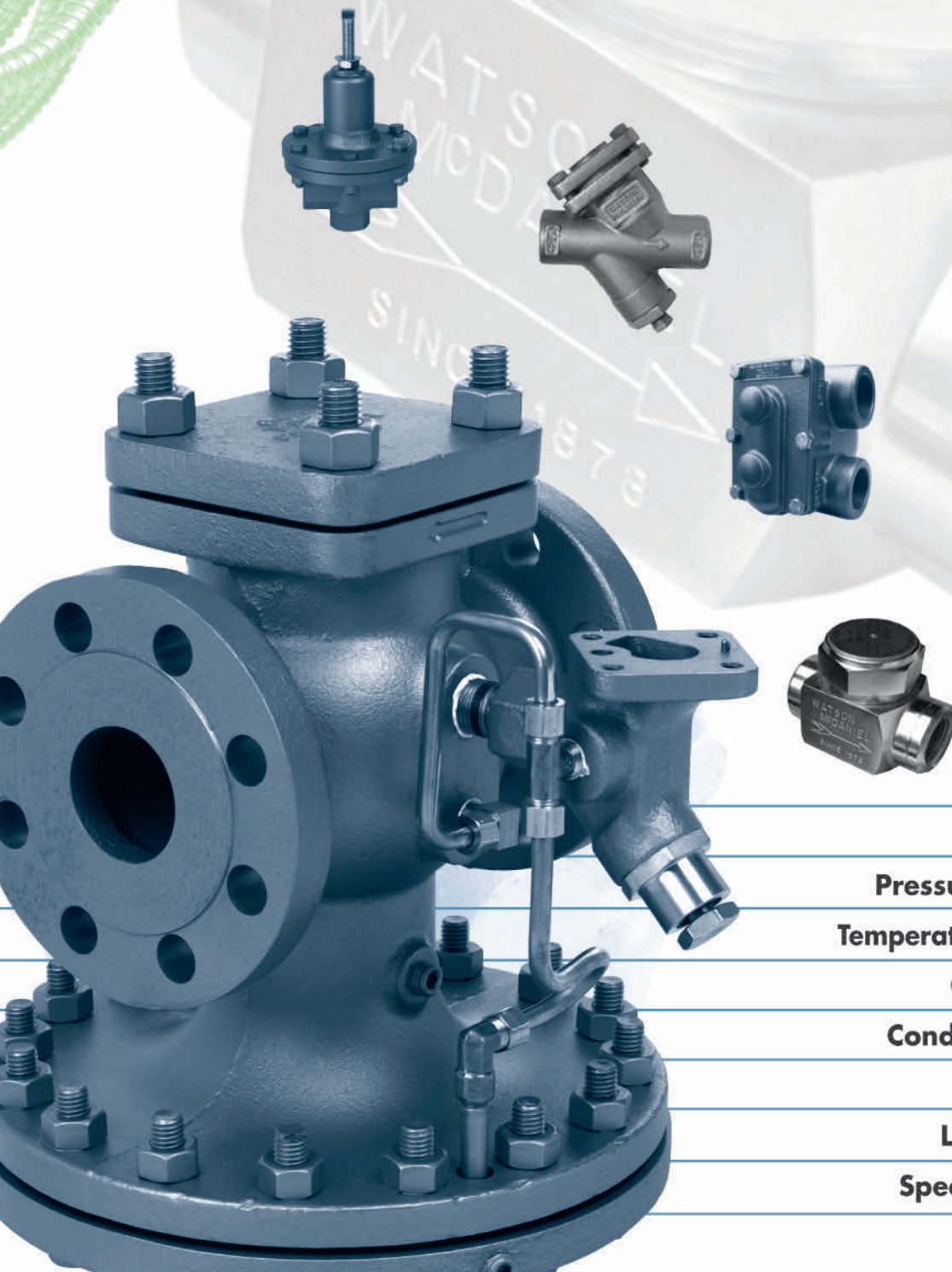




**Precision Manufactured  
Steam Products**



**Steam Traps**

**Pressure Regulators**

**Temperature Regulators**

**Control Valves**

**Condensate Pumps**

**Relief Valves**

**Liquid Drainers**

**Specialty Products**

**Condensed Product Guide**

## Thermodynamic Traps

Thermodynamic traps are typically used on drip or tracing applications in chemical processing plants, petroleum refineries, paper mills, and other processing industries that use higher pressure steam.

**Watson McDaniel** offers many different models with features including in-line repairability, high pressures up to **3600 psig** and integral strainers for protection against dirt and contamination.



**WD600**

**DRIP, TRACER:**

The WD600 thermodynamic steam trap is commonly used as a drip trap on steam mains and steam supply lines. These traps can be used on tracing applications; however, thermostatic traps are normally recommended for this service. Ideal for outdoor applications that are subject to freezing and for superheated steam conditions.



**WD900S**

**DRIP:**

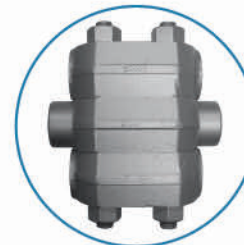
The WD900S/WD900LS thermodynamic steam trap is primarily used as a drip trap on high pressure steam mains and steam supply lines. Ideal for outdoor applications that are subject to freezing and for superheated steam conditions.



**WD600S**

**DRIP, TRACER:**

The WD600S thermodynamic steam trap is commonly used as a drip trap on steam mains and steam supply lines. Supplied with integral strainer and optional blowdown valve to protect the trap from contamination. These traps can be used on tracing applications; however, thermostatic traps are normally recommended for this service. Ideal for outdoor applications that are subject to freezing and for superheated steam conditions.



**WD3600**

**DRIP:**

The WD3600 thermodynamic steam trap is commonly used as a drip trap on high-pressure steam mains and steam supply lines. Supplied with an integral strainer to protect the trap from contamination. The internal working mechanism of the WD3600 can be completely replaced while the trap body remains in line. Ideal for outdoor applications that are subject to freezing and for superheated steam conditions.



**WD700S**

**DRIP, TRACER:**

The WD700S thermodynamic steam trap is commonly used as a drip trap on steam mains and steam supply lines. These traps are used on tracing applications; however, thermostatic traps are normally recommended for this service. Supplied with an integral strainer and optional blowdown valve to protect the trap from contamination. The internal working mechanism of the WD700S can be completely replaced while the trap body remains in line. Ideal for outdoor applications that are subject to freezing and for superheated steam conditions.

Model	Max Operating Pressure PSIG	Sizes	Max Capacity LBS/HR	Body Material	Key Feature
<b>WD600</b>	<b>600</b>	3/8" - 1"	4,840	420 F	Cost-effective
<b>WD600S</b>	<b>600</b>	1/2" - 1"	3,140	420 F	Integral Strainer
<b>WD700S</b>	<b>600</b>	1/2" - 1"	1,750	Alloy Steel	Repairable
<b>WD900S</b>	<b>900</b>	1/2" - 1"	968	Alloy Steel	Repairable
<b>WD3600</b>	<b>3600</b>	1/2" - 1"	640	Alloy Steel	Repairable

## Thermostatic Traps

Thermostatic traps are used on drip, tracing, and process applications. They have excellent air-venting capability allowing for quick system start-up. These traps feature welded stainless steel bellows, investment cast stainless steel bodies, integral strainers and in-line repairability offered by certain models.



**WT1000**

**DRIP, TRACER:**

The WT1000 thermostatic steam trap was specifically designed for drip and tracing applications as well as an air vent for heat exchangers. Like all thermostatic traps, the WT1000 is small, light, and has excellent air handling capabilities. The discharging of air on start-up allows steam to enter the system more quickly.



**WT3000/4000**

**PROCESS:**

The WT3000/4000 thermostatic steam trap is used for industrial process applications. Their compact size, all stainless steel construction, excellent air handling capability and wide operating pressure range make them a great choice for most process applications. Thermostatic traps are far superior to bucket traps and thermodynamic disc traps in their ability to remove air from the system.



**WT2500**

**DRIP, TRACER, PROCESS:**

The WT2500 thermostatic steam trap is used for drip, tracing and process applications. Their compact size, excellent air handling capability and wide operating pressure range make them a great choice for most applications. Thermostatic traps are far superior to bucket traps and thermodynamic disc traps in their ability to remove air from the system.



**WT5000**

**TRACER:**

The WT5000 Series Bimetal Steam Trap is used in steam tracing applications (process lines, instrumentation and winterization, general steam jacketing) and small process applications where accurate control of condensate discharge temperature is required to utilize the sensible heat of the condensate.



**WT2000C**

**DRIP, TRACER, PROCESS:**

The WT2000C thermostatic steam trap is used for drip, tracing, and process applications. Their compact size, all stainless steel construction, excellent air handling capabilities, and the ability to operate over a wide pressure range make them a good choice for most applications. They can also be used as an air vent on heat exchangers. Thermostatic traps are far superior to bucket traps and thermodynamic traps in their ability to remove air from the system. The discharging of air on start up allows steam to enter the system more quickly.



**TS125/TT125**

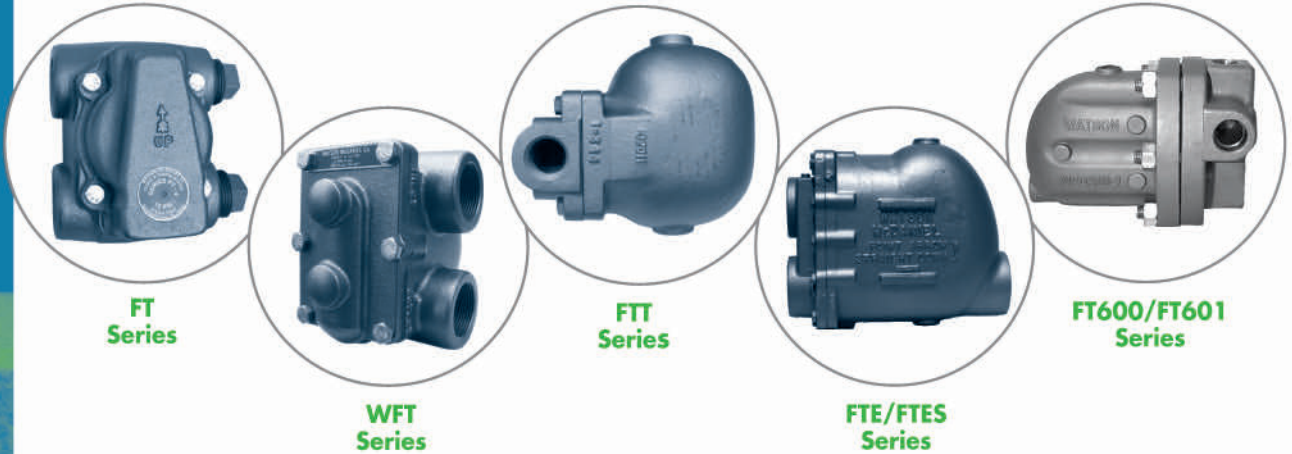
TS125/TT125 thermostatic steam traps are predominantly used in the HVAC industry. They are referred to as radiator traps because the quick-disconnect right angle connection is found on most radiator installations. Their excellent air handling capabilities, compact size, and economical cost make them a great choice for air vents on heat exchangers or for steam trap applications on OEM equipment.

Model	Max Operating Pressure PSIG	Sizes	Max Capacity LBS/HR	Body Material	Key Feature
WT1000	300	1/2", 3/4"	750	Stainless	Cost-effective
WT2500	250	1/2", 3/4"	5,093	Cast Iron	Repairable
WT2000C	650	1/2", 3/4"	7,000	Stainless	Cost-effective
WT3000	650	1/2", 3/4"	7,000	Stainless	Repairable
WT4000	300	3/4", 1"	12,500	Stainless	Repairable
WT5000	650	3/8", 1"	690	Cast Steel	Repairable
TS125/TT125	125	1/2", 3/4"	3300	Brass	Repairable

## Float & Thermostatic

### Float & Thermostatic Traps

Primarily used for process application due to their high-capacity and excellent air venting capabilities. **Watson McDaniel** offers the most complete range of F&T Traps in the industry. Trap body materials are available in Cast Iron, Ductile Iron and Cast Steel with operating pressures up to **450 PSIG**. Both in-line and parallel pipe connections are available.



Model	Max Operating Pressure PSIG	Sizes	Max Capacity LBS/HR	Body Material
FT	75	3/4", 2"	12,500	Cast Iron
WFT	250	3/4" - 2"	11,000	Cast Iron
FTT	300	1/2" - 2"	5,825	Ductile Iron
FTE/FTES	200	1 1/2" - 2 1/2"	105,000	DI/CS
FT600/FT601	450	3/4" - 4"	290,000	Steel

**Features:** Hardened Stainless Steel internals and welded Stainless Steel Thermal Air vent.

## Inverted Bucket

### Inverted Bucket Traps

Inverted bucket traps are an economical solution for drip and tracing service and are excellent for higher pressure steam applications.

**Watson McDaniel** Inverted Bucket Traps body materials are available in Stainless Steel and Cast Iron. All internals are made of hardened Stainless Steel for extended service life.



**WSIB/WSIBH**  
1/2" - 3/4"  
All Stainless Steel



**Cast Iron Bucket Traps**  
1/2" - 1 1/2"

Available with Integral Strainer  
Capacities up to 5,500 lbs/hr  
up to 250 PSIG Operating Pressure

# Universal Style "Quick-Change" Connectors & Traps

The all stainless steel Universal Style Steam Traps feature a permanent installation of the Universal Connector with a 2-bolt mounting arrangement for the Universal Steam Trap Module, allowing the Steam Trap to be removed and replaced in minutes.

- ◆ without having to unthread piping
- ◆ by removing only 2 bolts with a socket or open-end wrench

Trap module can swivel 360° on the universal connector allowing proper orientation.

7 different connectors • 6 different trap modules

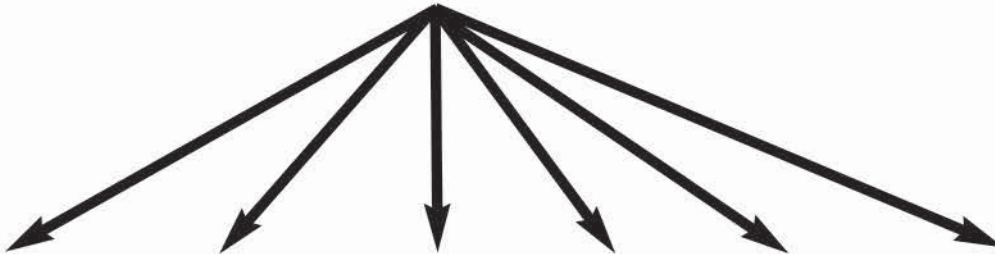
Thermodynamic • Thermostatic • Inverted Bucket • Bi-Metallic • Float & Thermostatic

Any Universal Connector will work with any Universal Steam Trap Module



**Universal Style Steam Traps** are recommended in any application, – particularly those which require simple and frequent replacement of steam traps

Select a **Trap Module** for your application



**WD450**  
Thermodynamic  
"Top Mount"



**WD450SM**  
Thermodynamic  
"Side Mount"



**WT450**  
Thermostatic



**WB450**  
Bi-Metallic



**WSIB450**  
Inverted  
Bucket



**WFT450**  
Float &  
Thermostatic

## Pressure Motive Pumps

Watson McDaniel Pressure Motive Pumps and conventional Electric Pumps for condensate recovery. Our fully-equipped ASME qualified fabrication facility will design and build either standard or specialized skid packages to meet your specific system needs.

### PMPC



#### Basic Pumping Applications up to 200 PSIG

- Ductile Iron body (PMO 200 PSIG)
- Patented Snap-Assure Mechanism with Inlet and Outlet Check Valves

### PMPF



#### Basic Pumping Applications up to 200 PSIG

- Fabricated Carbon Steel body (PMO 200 PSIG)
- Patented Snap-Assure Mechanism with Inlet and Outlet Check Valves

### PMPSS



#### Corrosive Applications up to 150 PSIG

- Fabricated Stainless Steel body (PMO 150 PSIG)
- Patented Snap-Assure Mechanism with Inlet and Outlet Check Valves

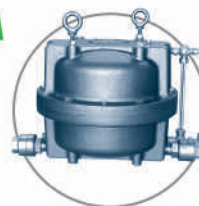
### PMPLS



#### Low-Profile Applications up to 150 PSIG

- Fabricated Carbon Steel body (PMO 150 PSIG)
- Patented Snap-Assure Mechanism with Inlet and Outlet Check Valves

### PMPM



#### Low-Profile Applications up to 150 PSIG

- Cast Iron body (PMO 150 PSIG)
- Patented Snap-Assure Mechanism with Inlet and Outlet Check Valves

### PMPBP



#### High-Capacity Applications up to 150 PSIG

- Fabricated Carbon Steel body (PMO 150 PSIG)
- with Inlet and Outlet Check Valves

### PMPSP

#### "Pit Boss"



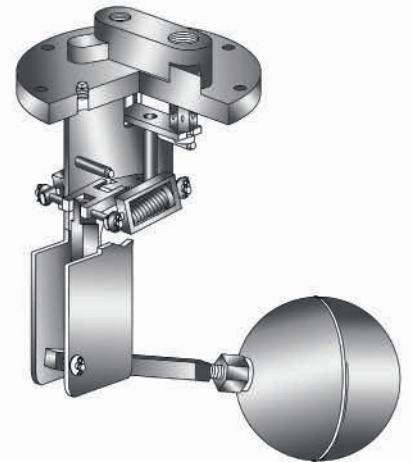
#### Sump Drainer

- Fabricated Carbon Steel body (PMO 150 PSIG)
- These non-electric sump drainers are designed to drain unwanted water from sumps, pits, underground tunnels and low lying areas
- Patented Snap-Assure Mechanism with Inlet and Outlet Check Valves

#### Pumps Available:

**Ductile Iron**  
**Carbon Steel**  
**Stainless Steel**  
**Low-Profile**  
**High-Capacity**  
**Vertical Discharge**  
**High-Pressure**

#### INTERNAL MECHANISM



#### Check Valves:

Stainless Steel.

#### Internal Mechanism:

- All Stainless Steel
- Patented "Snap-Assure" Mechanism
- **Hard-chrome plated** pivot pins and wear points
- **17-4 Stainless** heat-treated inlet and vent valve
- Dual compression springs minimize stress and last indefinitely
- **Inconel-X-750** Spring material for high-temperature corrosive service
- Precision manufactured mechanism requires no adjustment
- Competitor's replacements available

## Pumps with Receiver Tanks



### Simplex, Duplex, Triplex & Quadraplex Systems

Standardized Simplex, Duplex, Triplex, and Quadraplex packaged systems include the stand alone pumps and check valves with receiver tank mounted on a steel base and frame. Multiple pumping units can be used for increased capacity or for system redundancy. The units are available in Ductile Iron, Carbon Steel and Stainless Steel.

Additional options such as sight glasses, insulation jackets, cycle counters, motive and vent piping, pressure regulators, steam traps, strainers and ASME code stamps, etc., are available.

## Pump & Trap Combinations



### Models PMPT, PMPTSS & WPT

Pump & trap combinations are used for draining condensate from a single piece of heat transfer equipment. Model **PMPT** has an internal steam trap inside the pump body. (Also available in stainless - PMPTSS)

The **WPT Series** have an appropriately sized external steam trap attached to the pump and are mounted on a common base for high-capacity applications.

### ACCESSORIES & OPTIONS for Stand Alone Units

Custom Tanks, Insulation Jackets, Gauge Glasses, Cycle Counters, Pre-piped Accessories, Replacement, Mechanisms, Check Valves, etc.

### SIZING & SELECTION for All Non-Electric Pumps & Systems

Pump Capacities, PMP, Receiver & Vent, Pump-Trap & Reservoir Sizing (see catalog sizing pages)

## Customized Skid Packages



Watson McDaniel's fully equipped ASME qualified fabrication facility stands ready to assist you with all your fabrication needs. Our engineering staff specializes in the design of pressure motive condensate pumping systems for both industrial and institutional applications. We offer either standard packages, or specialized systems to meet your specific needs.

## Electric Pumps

Electric Condensate pumps are available in both Duplex and Simplex configurations with either **Steel** or **Cast Iron** pump tanks.

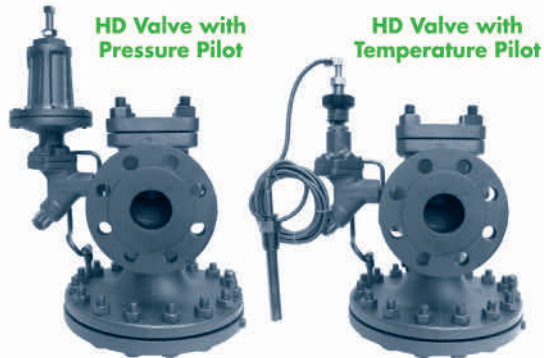


## Pilot-Operated Pressure & Temperature Regulating Valves

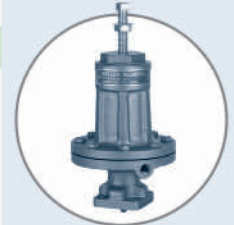
### HD Series Pilot-Operated Regulating Valve DUCTILE IRON BODY



The HD Series Pilot-Operated Regulating Valves are used for controlling pressure and temperature in industrial and HVAC steam applications.



- HD Series Regulators are made from Ductile Iron bodies with hardened stainless steel trim (55Rc)
- Pressure and temperature pilots can be used in combination eliminating the need for a separate pressure and temperature regulator.
- Modular design allows any pilot to be added to the main regulating valve.
- Available in Ductile Iron for higher-pressure ranges and increased safety.
- HD Series Regulators come standard with full port strainers and blow down valve on the pilot mount. This guards against dirt in the steam system which can cause regulators to fail.
- Innovative design allows the pilot to be mounted on either side of the regulator and is easily field reversible with no need to re-bend transmission tubing.
- Pilot adapter and tubing come fully assembled to regulator. The control pilot requires only four bolts to complete the installation.



Pressure Back Pressure Differential Pressure



Temperature



Air



Solenoid

### HS Series Pilot-Operated Regulating Valve CAST STEEL BODY



The Watson McDaniel HSP Pilot-Operated Regulating Valve is constructed of Cast Carbon Steel for higher pressure & temperature ratings.

- Cast Steel body for higher pressure and temperature ratings
- New, convenient 2-bolt pilot design simplifies installation
- Hardened stainless steel trim for extended life
- Optional Stellite trim available
- Full port strainer and blowdown valve on pilot adapter for ultimate protection from dirt and scale
- Maintains downstream pressure + 1.0 PSIG
- Choice of three overlapping spring ranges
- Pre-mounted pilot & tubing simplifies installation



# Pressure Regulating Valves



## Pressure Regulating Valves

Watson McDaniel's wide range of pressure regulators are available in bronze, cast iron and ductile-iron and are designed for steam, air, liquid and other fluid service. These regulators can handle inlet pressures up to **450 PSIG** and are available in threaded and flanged connections.

Model	Max Operating Pressure PSIG	Sizes	Service	Body Material
455 Series	250	1/2" - 4"	Steam, Air, Water	Bronze/Cast Iron
402/403 Series	450	1/2" - 4"	Steam, Air	Ductile Iron
B Series	250	1/2" - 4"	Air, Water	Bronze/Cast Iron
O Series	250	3/8" - 2"	Steam, Air, Water	Cast Iron

## Relief & Back Pressure Valves



R Series & 10691

3040 Series

### Relief and Back Pressure Valves

are typically used for water pump by-pass, sprinkler systems, fountains, irrigation, and fire protection systems.

Materials: Bronze & Cast Iron  
Max Inlet Pressure: 300 PSI  
Sizes: 1/2" - 3"

## Self-Operated Temperature Regulating Valves

### For Heating and Cooling

The **175 & 153 Series**, and the **W91 & W94** Self-Operating Temperature Regulating Valves require no external power source making them easy to install and maintain.

Temp Range: 20° - 440°F  
Sizes: 1/2" - 4"



W91 & W94 Series



175/153 Series

## Compact Control Valves

### W910 Series Compact Control Valve

The **W910 Series Pneumatic Control Valve** offers high quality at an economical price, incorporating many features found only on more expensive units. Models are available to provide the proper flow response required by the application.



TA901 I/P TRANSDUCER



TA890 ELECTRONIC PID CONTROLLER



TA987 AIR FILTER/REGULATOR



ELECTRONIC TEMPERATURE SENSOR RTD or THERMOCOUPLE



## Controllers & Sensors

Regulators & Control Valves



## Specialty Products



**WSVB/WSVI**  
**Safety Relief Valves**  
are used for over pressure protection on unfired pressure vessels.  
Materials: Cast Iron, Bronze  
Sizes: 1/2" – 6"  
Pressures : up to 250 PSI



**WCII/WCSY/WSSY**  
**"Y" Strainers** are used for straining dirt particles from fluid & steam in pipe lines.  
Materials: Cast Iron, Steel, Stainless Steel  
Sizes: 1/2" – 4"  
Pressures : up to 250 PSI



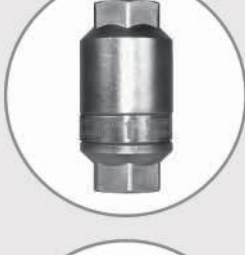
**Suction Tee**  
**Suction Tees** are used for blending, agitation, recirculation and mixing.  
Materials: Cast Iron, Bronze, Stainless Steel  
Sizes: 1/2" – 3"



**W-EJECT/WLM/WELL**  
**Ejectors** are used for exhausting, pumping and mixing.  
Materials: Cast Iron, Bronze  
Sizes: 1/2" – 2"



**AE1800/AV813W**  
**Air Eliminators** are used for the removal of air and other gases from liquid systems.  
Materials: Cast Iron, Stainless Steel  
Sizes: 1/2" & 3/4"



**AV2000C**  
**Air Vents** are used on industrial steam systems for the removal of air and other non-condensable gases from steam mains and process equipment.  
Materials: Stainless Steel  
Sizes: 1/2" & 3/4"



**AVT125**  
**Air Vents** are used on steam systems for the removal of air and other non-condensable gases from process equipment.  
Materials: Brass  
Sizes: 1/2" & 3/4"



**WSTTV**  
**Steam Trap Test Valve**  
can be installed downstream of any steam trap to check its operation.  
Materials: Bronze, Stainless Steel  
Sizes: 1/2" – 1"  
Pressures : up to 150 PSI



**WDS**  
**Steam Moisture Separators**  
are used for the removal of entrained liquid or solids from steam.  
Materials: Cast Iron, Steel  
Sizes: 3/4" – 12"  
Pressures : up to 300 PSI



**WEH**  
**Exhaust heads** are used to separate all entrained water and particles from steam prior to being discharged directly to the atmosphere.  
Material: Cast Iron, Steel  
Sizes: 1" – 10"  
Pressures : up to 150 PSI



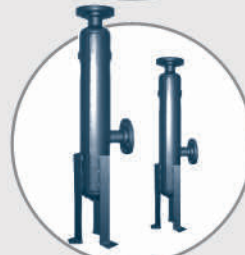
**WVBSS**  
**Vacuum Breaker**  
are used on heat exchangers, air coils, jacketed kettles and other process equipment to break the vacuum caused by condensing steam.  
Material: Stainless Steel  
Sizes: 1/2"



**WFPV/WSPV**  
**Freeze Protection Valves**  
are used to drain liquid from systems prior to freezing.  
Materials: Stainless Steel,  
Sizes: 1/2" – 3/4"



**WSSCV**  
**Scald Protection Valves**  
are used to protect personnel from accidental scalding when water temperatures rise above 95°F  
Material: Stainless Steel  
Sizes: 1/2" – 3/4"



**WSSCV**  
**Check Valves** are used in petrochemical, pulp & paper, textile and the food & beverage industry. Available with 1/4 PSI and 5 PSI cracking pressure.  
Material: Stainless Steel  
Sizes: 1/2" – 3"

**WFLV**  
**Flash Recovery Vessels** are installed in condensate return systems to capture and utilize the flash steam that is generated from the hot condensate.  
Material: Steel  
Sizes: up to 16" flanged

# Liquid Drainers

Watson McDaniel's line of Liquid Drainers are manufactured from a variety of materials including Cast Iron, Ductile Iron, Cast Steel, and Stainless Steel. Internal mechanisms are made from Stainless Steel and hardened seats and include wear points for extended service life.



### WLD1900

Materials: Cast Iron  
Max Capacities: 23,800 lbs/hr  
Sizes: 3/4" – 2"



### WLD600

Materials: Carbon Steel, Stainless available  
Max Capacities: 960,000 lbs/hr  
Sizes: 3/4" – 4"



### WLD1400

Material: Ductile Iron  
Max Capacities: 75,000 lbs/hr  
Sizes: 1/2" – 2"



### WLDE/WLDES

Materials: Ductile Iron/  
Carbon Steel  
Max Capacities: 435,000 lbs/hr  
Sizes: 1 1/2" – 2 1/2"



### WLD1800/WLD1800R

Materials: 304 Stainless Steel  
Max Capacities: 2,150 lbs/hr  
Sizes: 1/2" & 3/4"  
Non-repairable/Repairable

## Clean Steam

Watson McDaniel's line of **Clean Steam Products** are used in clean steam applications and were especially designed and manufactured to service the Pharmaceutical and Biotech industries.

The **FDA400, 500 & 600 Series Thermostatic Steam Traps** and **FDA800 Thermodynamic Steam Traps** are used on Clean Steam applications as drip traps on piping runs as well as drainage for **CIP** (clean-in-place) **SIP** (sterilize-in-place) systems. Manufactured using certified 316 stainless steel these products are precision machined and electro-polished to less than 25 RMS surface finish.



FDA400



FDA500



FDA600



FDA800

### Steam Traps

Thermodynamic  
Thermostatic  
Float & Thermostatic  
Inverted Bucket  
Bi-metallic  
Universal Connector  
Clean Steam  
Manifolds

### Pumps

#### Pressure Motive Pumps

- Ductile Iron
- Carbon Steel
- Stainless Steel
- High Pressure-Carbon Steel
- Low Profile-Carbon Steel
- Sump Drainer-Carbon Steel
- High Capacity-Carbon Steel
- Low Profile-Cast iron
- Fabricated Custom Skid Packages

#### Electric Condensate Return

##### Pumps

- Cast Iron
- Carbon Steel

### Regulators

#### Pilot-Operated Regulators

- Pressure Pilot
- Back Pressure Pilot
- Differential Pressure Pilot
- Temperature Pilot
- Air Pilot
- Solenoid Pilot
- Pneumatic Controllers

#### Self-Operated Regulators


- Pilot-Operated-Steam, Air
- Pressure-Steam, Air, Water
- Relief & Back Pressure Valves
- Self-Operated Temperature
- Control Valves

### Liquid Drainers

Float Type-CI, CS, DI, SS  
Inverted Bucket  
Guided Float Type

### Specialty Products

Safety Relief Valve  
Strainer  
Mixing Tee  
Ejector  
Air Eliminator  
Air Vent  
Separator  
Exhaust Head  
Vacuum Breaker  
Freeze Protection Valve  
Scald Protection Valve  
Check Valve  
Drip Pan Elbow  
Flash Tank



Since 1878 **Watson McDaniel** has been providing a wide range of products and services to various industries. Our products have served to make the operation of steam, compressed air, heat transfer, and fluid systems more effective and efficient.

Watson McDaniel has earned **ISO 9001** Certification, and has continued its commitment to this valuable program with world-class manufacturing, assembly, inspection, and control systems to assure customers unequalled dependability and long product service life. Our machine shop, considered one of the most modern in the industry, gives us the capability to quickly respond to customer needs in the marketplace.

**Watson McDaniel** serves the global marketplace with a network of Manufacturer's Representatives, Distributors, Manufacturing Plants and Sales Offices throughout the world.

Please contact our company with your next steam system requirements.



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