



# Service Data

SD-03-3602

## Bendix® TW-1™, TW-3™, TW-4™, TW-5™ & TW-6™ Control Valves

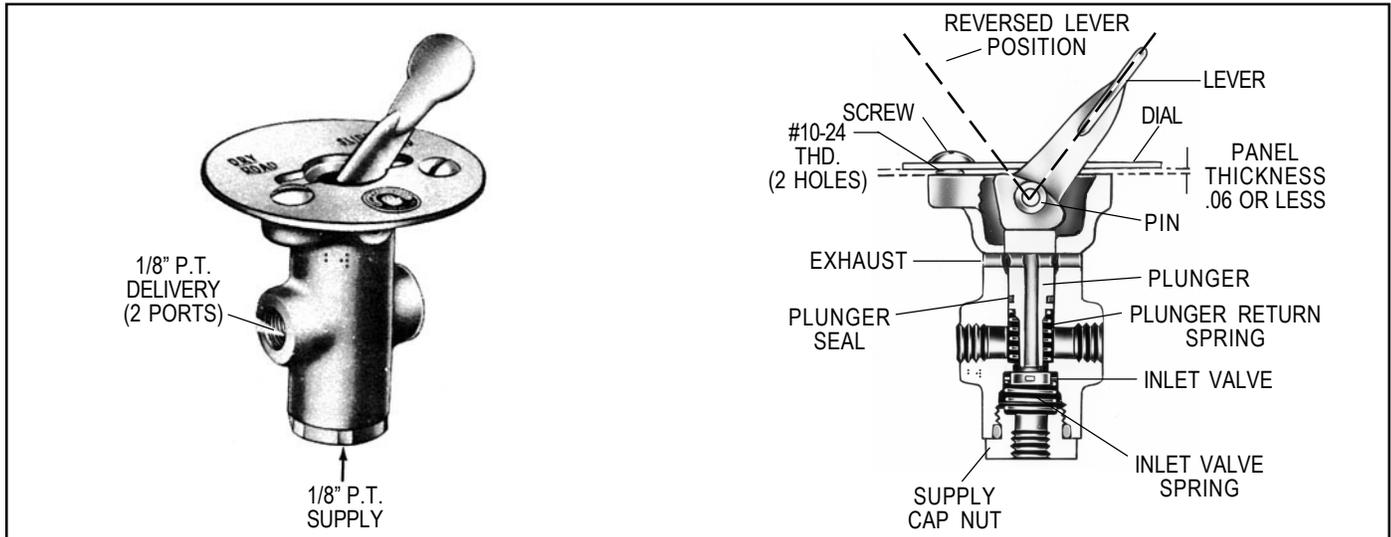


FIGURE 1 TW-1™ CONTROL VALVE

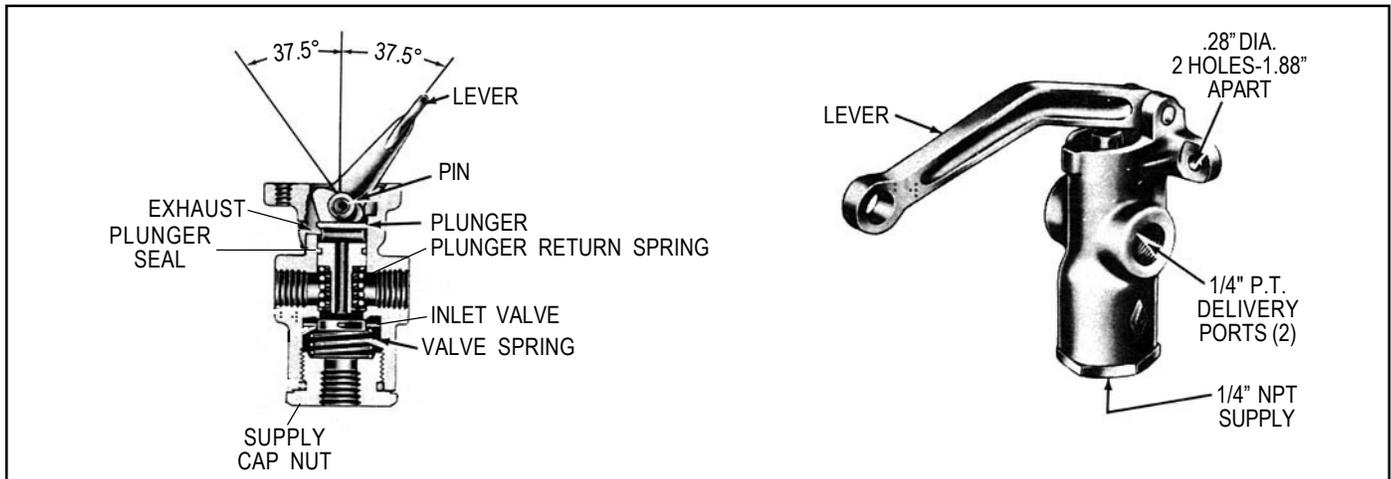


FIGURE 2 - TW-3™ CONTROL VALVE

### DESCRIPTION

The TW series valves are manually operated, non-graduating, on-off valves. They are extensively used in air systems to control nonmodulating air controlled devices. They may be lever or button operated, direct or remote control.

The TW-1™ valve (Figure 1) is normally panel mounted and can be provided with a steel, zinc or nylon manually operated lever. Some are equipped with a steel lever with connectors for Bowden cable control. All TW-1™ valves have 1/8" NPT ports.

The TW-3™ valve (Figure 2) is lever operated, either direct or remote and differs from the TW-1™ valve in having 1/4" NPT ports and a larger body and capacity. Some versions have a heavy inlet valve spring making them suitable for vacuum control.

TW-4™ (Figure 3) and TW-5™ valves are similar to the TW-1™ valve except the plunger is designed for a push button (TW-4™ valve), giving momentary application whenever the button is depressed. The TW-5™ valve is similar, but has an extended plunger.

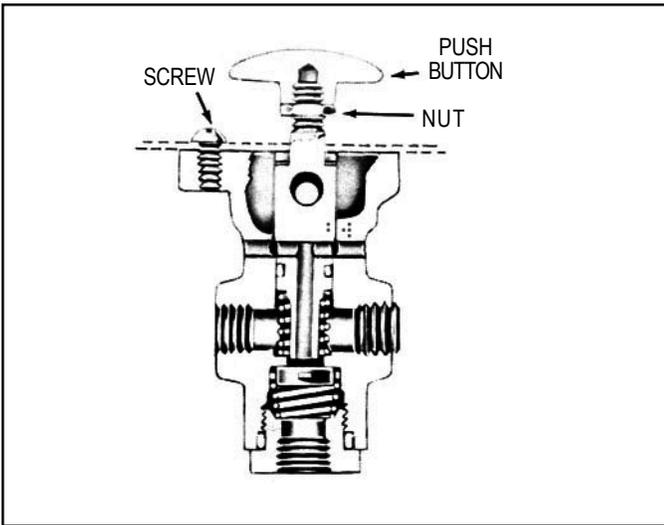


FIGURE 3 - TW-4™ CONTROL VALVE

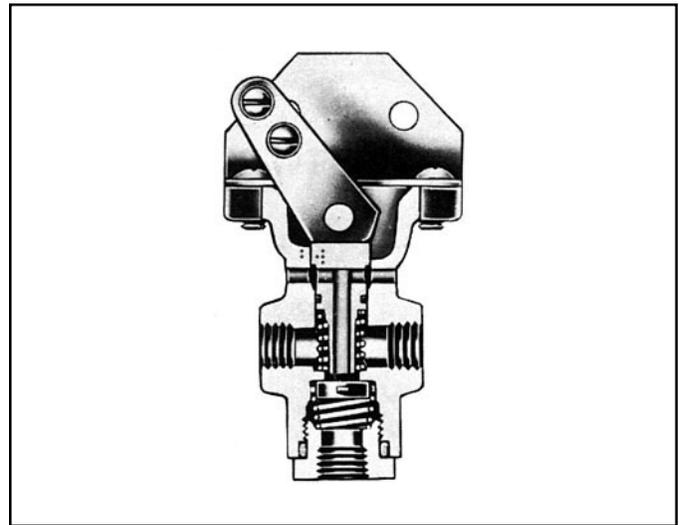


FIGURE 4 - TW-6™ CONTROL VALVE

The TW-6™ valve (Figure 4) is a TW-1™ valve with a grounding switch included. In the exhaust position the switch is open. When the valve is applied the switch is closed.

## OPERATION

With air pressure at the supply port (Figure 1) and the plunger in the upward position, the valve is in the exhaust position. The delivery ports are open to atmosphere through the exhaust passage in the center of the plunger.

When the plunger is depressed by the cam action of the lever (Figure 1) or by a direct force on a push button (Figure 3) the plunger contacts the inlet valve, closing the exhaust passage and pushes the inlet valve off the inlet seat in the body, allowing supply air to flow through the delivery ports to the controlled device.

## SERVICE CHECKS

### OPERATING AND LEAKAGE TESTS

Connect a 100 psi air pressure source to the supply port and connect delivery to an air gauge (if there are two delivery ports, plug one). With the valve in the released position, check for leakage at the exhaust holes with a soap solution. Place the valve in the applied position. Supply air pressure should show on the gauge. Check for leakage at the exhaust holes.

Leakage should not exceed 100 SCCM or a 1" bubble formed in 5 seconds.

If the TW valve does not function as described or if excessive leakage occurs, it is recommended that it be replaced with a new unit or repaired with genuine Bendix parts.

## **WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:**

When working on or around a vehicle, the following general precautions should be observed at all times.

1. Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. Always wear safety glasses.
2. Stop the engine and remove ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, **EXTREME CAUTION** should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components.
3. Do not attempt to install, remove, disassemble or assemble a component until you have read and thoroughly understand the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.
4. If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with an AD-IS™ air dryer system or a dryer reservoir module, be sure to drain the purge reservoir.
5. Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
6. Never exceed manufacturer's recommended pressures.

7. **Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.**
8. **Use only genuine Bendix® replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.**
9. **Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.**
10. **Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.**

## **REMOVAL**

Disconnect all air lines and remove the valve.

## **INSTALLATION**

Place the valve handle through appropriate hole in the panel, place the dial (if used) over handle and install the mounting screws. Connect the air lines. Apply air pressure and check/repair air leaks.

## **PREVENTIVE MAINTENANCE**

**Important:** Review the Bendix Warranty Policy before performing any intrusive maintenance procedures. A warranty may be voided if intrusive maintenance is performed during the warranty period.

No two vehicles operate under identical conditions, as a result, maintenance intervals may vary. Experience is a valuable guide in determining the best maintenance interval for air brake system components. At a minimum the TW valves should be inspected every 6 months or 1500 operating hours, whichever comes first, for proper operation. Should the TW valves not meet the elements of the operational tests noted in this document, further investigation and service of the valve may be required.

## **DISASSEMBLY**

Remove the operating handle or lever by driving the pin out of the body and remove the lever, plunger and plunger spring. Remove the o-ring seal from the plunger.

Remove the supply cap nut, inlet valve and spring. Remove the o-ring from the supply cap nut.

## **CLEANING AND INSPECTION OF PARTS**

Wipe all rubber parts clean. Clean the plastic and metal parts in mineral spirits and dry thoroughly. Inspect all rubber parts for wear or deterioration and replace where necessary. Examine the inlet seat in the body if nicked or corroded. Inspect all springs for cracks, distortion or corrosion and replace if necessary.

## **ASSEMBLY**

Prior to assembly lubricate the body bore, plunger, plunger dome, o-rings, lever cam, lever pin, and cap nut threads with Bendix barium base grease part number 246671.

- 1) Place inlet valve in body.
- 2) Place inlet valve spring on inlet valve.
- 3) Place o-ring on cap nut and install cap nut.
- 4) Install plunger spring into top of body.
- 5) Install o-ring seal on plunger and install plunger.

## **TW-1™, TW-3™ & TW-6™ CONTROL VALVES**

Depress the plunger, place lever cam in slot in body, line up holes in body with hole in lever and insert the pin. Support the body and drive the pin in fully.

## **TW-4™ & TW-5™ CONTROL VALVES**

Depress the plunger with button until hole in plunger lines up with holes in body. Insert the pin, support body and drive the pin in fully.

## **LEAKAGE TEST**

Test the valve per instructions in the Service Checks section of this document.

