

Western Valve



Installation, Operation and Maintenance Instructions



DAN-EX
Dual Expanding Plug Valve
Made in the USA

OPERATION OF THE DAN-EX EXPANDING VALVE

The DAN-EX valve has dual expanding seals and is a plug-type valve having a mechanical means of expanding the seals when seating and retracting them prior to quarter-turn rotation. The Resilient Seals (Viton, Hycar) are bonded to metal Seating Slips (No. 5). In opening the valve, the Center Plug (No. 4) is raised, thus retracting the Seating Slips through their tapered dovetail connections. Only after the Seating Slips are fully retracted perpendicularly from the Body Seat can the plug, which is mounted on Trunnions, be rotated to the open position.

Conversely, in closing the valve, the plug and seating slips are rotated freely, with no plug-to-body contact, until the Seating Slips are positioned over the ports. Then the plug is driven down between the slips, and the tapered surfaces wedge out the seating slips for a positive upstream as well as downstream shut-off. For maximum upstream sealing, it is important to torque the valve closed.

The plug lift/lowering/rotation action is performed in the Operator Assembly (No. 16). The Operator Handwheel (No. 21) is rotated clockwise to close, and counter-clockwise to open - similar to other valves. The Position Indicator (No. 22) gives the valve open or close indications. Where DAN-EX valves are used for double block-and-bleed service, the Body Bleed Valve (No. 23) may be left open when the DAN-EX valve is closed, but must be closed before the DAN-EX valve is opened. Since the DAN-EX valves do hold bubble-tight, it is important to prevent pressure from exceeding the working pressure of the valve (See Paragraph 6 under MAINTENANCE).

On gear-operated models, the Handwheel position may be changed as follows:

- a) Place DAN-EX valve in full open position.
- b) Remove Gear Housing Cap Screws (No. 20).
- c) Turn Handwheel to further open the valve. This will turn Gear Housing Assembly (No. 19); continue until Handwheel comes to desired position and Gear Housing Mounting holes are realigned.
- d) Replace Gear Housing Mounting Cap Screws.

MAINTENANCE OF THE DAN-EX EXPANDING VALVE

1. In cold climates, before freezing weather sets in, any possible collection of water below Plug or Plug Trunnion should be drained out through Drain Plugs (No. 26). Check Manual Body Bleed (No. 23) for zero pressure before removing plugs.
2. If, at any time, the Manual Body Bleed (No. 23) should indicate an upstream leak, which cannot be stopped by ordinary hand force on the Handwheel, this must be corrected by one of the following:
 - a) Operate valve through the "Open - Close Cycle" while fluid is flowing, to try to flush out Valve Body. After several flushing attempts, close valve and check Body Bleed again. If Body Bleed still indicates valve leak, check Thermal Relief Assembly (No. 24) before replacing Seating Slips (See note in Paragraph 6 below).
 - b) To replace Seating Slips, the line must be drained. Place valve in open position (check Body Bleed (No. 23) for zero line pressure); then remove Lower Plate (No. 3) or Bonnet (No. 2). DAN-EX valves have both top and bottom entry to facilitate in-line maintenance.
 - c) Seating Slips (No. 5) can be withdrawn from Plug Dovetails and replaced. It is usually best to replace the Gasket (No. 8) and Lower Plate O-Ring (No. 7) or Bonnet "O" Ring (No. 7) when Slips are replaced.
3. If Stem Packing should fail, it can be changed as follows:
 - a) Close valve and check Body Bleed (No. 23) for upstream shutoff. Leave Body Bleed open. If valve is holding tight, then Packing can be changed under line pressure. If Body Bleed shows valve not to be holding upstream, then the line must be bled down in order to proceed with the change.
 - b) Remove Operator (No. 16) as outlined in Paragraph 4 below.
 - c) Remove Packing Gland (No. 10) and replace inner and outer O-Rings (Nos. 13, 14, 15).
 - d) Remove Packing Rings (No. 12) carefully and replace.
 - e) Replace Operator as outlined in Paragraph 4 below.
4. To change Operator Heads:
 - a) Close DAN-EX valve extra tight.
 - b) Remove Snap Ring and drive out Trunnion Pin (No. 17).
 - c) Remove Housing Mounting Bolts (No. 18) and lift off the Operator (No. 16).
 - d) Replace new Operator in reverse order.
 - e) Check operation of valve.

5. Lubricate Operator every year, while in the open position with a good grade Lithium-Based Extreme-Pressure (E.P), Multi-Purpose Grease. *CAUTION: Do not overfill Housing with grease.*
6. DAN-EX valves have a Thermal Body Relief Valve Assembly (No. 24) to relieve body pressure build-up caused by thermal expansion of the liquid media when the valve is in liquid service, to prevent the internal cavity pressure from rising above the shell pressure rating of the valve. The DAN-EX valves, as well as others of its type, must have a Thermal Relief System to enable them to be remotely operated by electric/hydraulic/air actuators.

The standard DAN-EX Relief Assembly contains a Thermal Relief Valve (No. 24), set at 25 PSI differential that is piped across one of the Seating Slips.

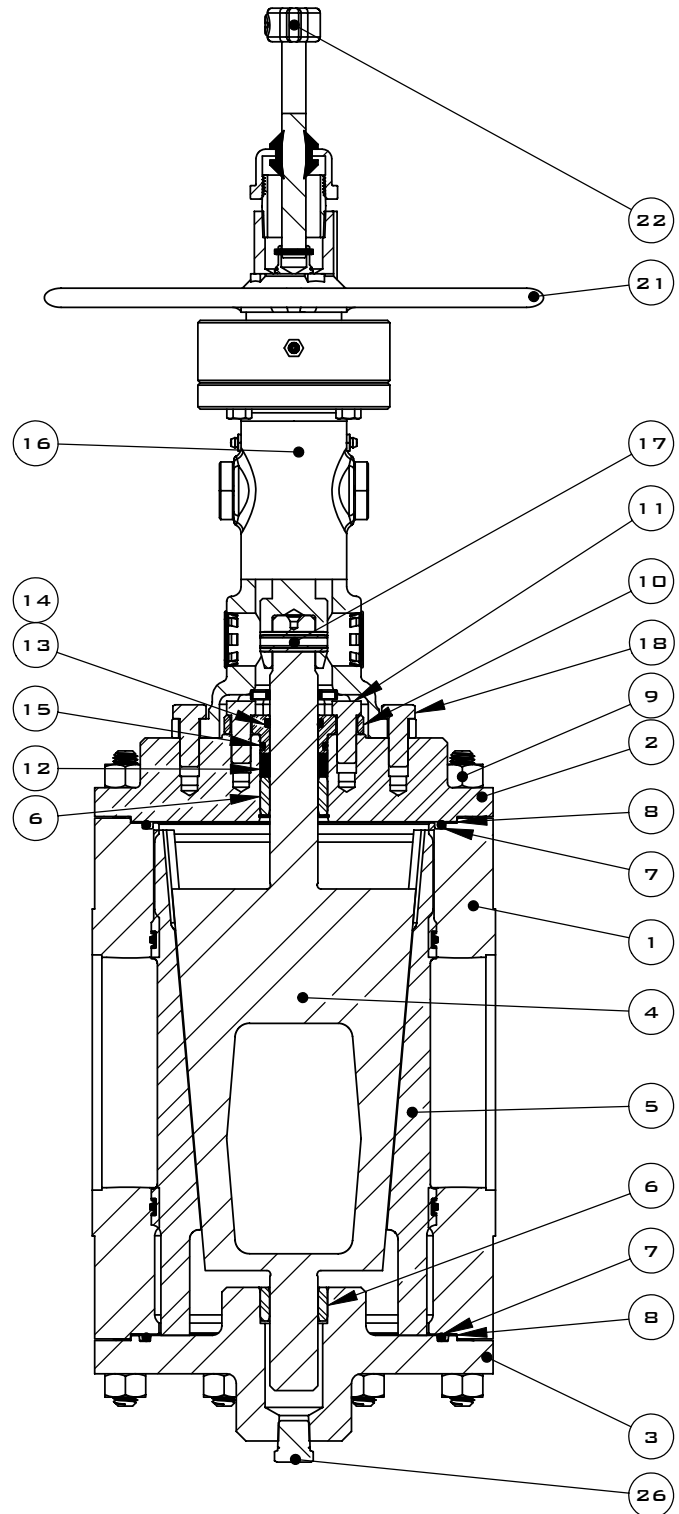
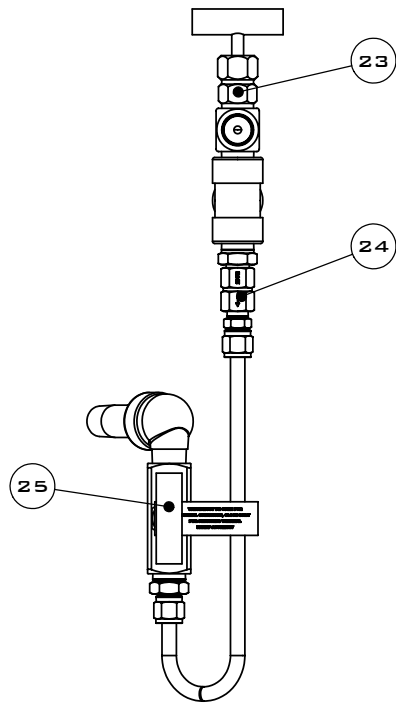
DAN-EX valves with this self-contained Thermal Relief Assembly, should be installed with the discharge of the Thermal Relief Valve piped to the upstream side of the valve. If, after the DAN-EX valve is installed in the line, it is noticed that the Thermal Relief Assembly is piped to the downstream port, the tubing should be switched to the upstream port.

There is a half-inch Manual Isolation Valve (No. 25) connected between the Thermal Relief Valve and the upstream port. This Manual Valve should always be left open and is normally closed only for maintenance purposes and hydrostatic testing.

NOTE: If a leak is indicated at the Body Bleed Valve, the Isolation Valve (No. 25) should be closed, which will indicate if a leak is from a damaged Seat Slip or a leaking Thermal Relief Valve. If the leak stops when the Isolation Valve is closed, the Thermal Relief Valve needs to be replaced.

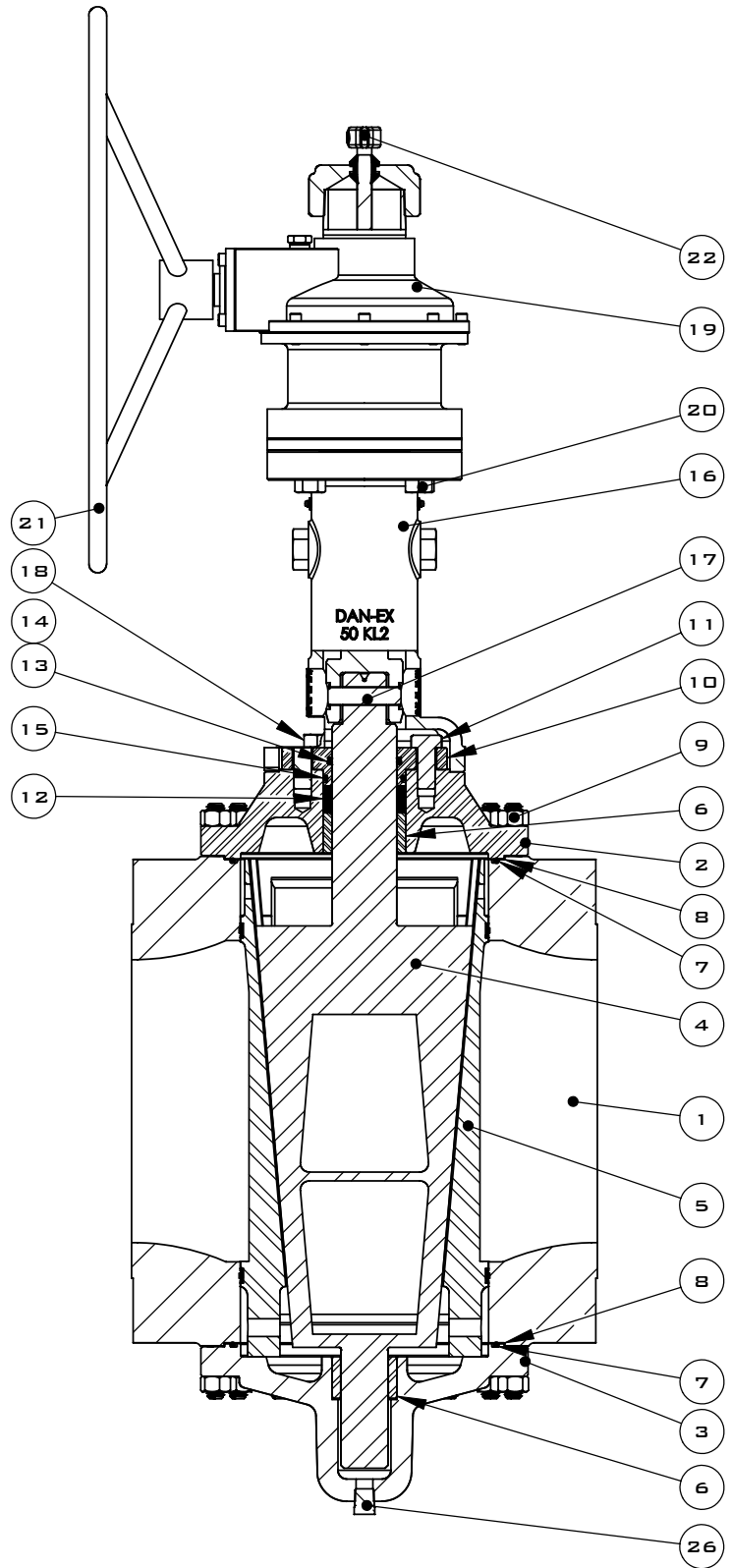
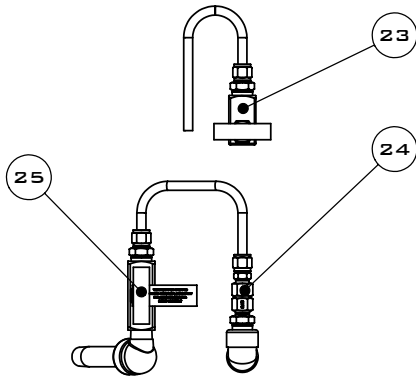
The other type of Relief Assembly uses a Thermal Relief Valve (No. 25) piped to the atmosphere. This valve is normally set slightly higher (10%) than the working pressure of the valve and is located adjacent to the Body Bleed Valve.

**DAN-EX
FIG. No. 271
RECTANGULAR PORT
ANSI CLASS: 150**



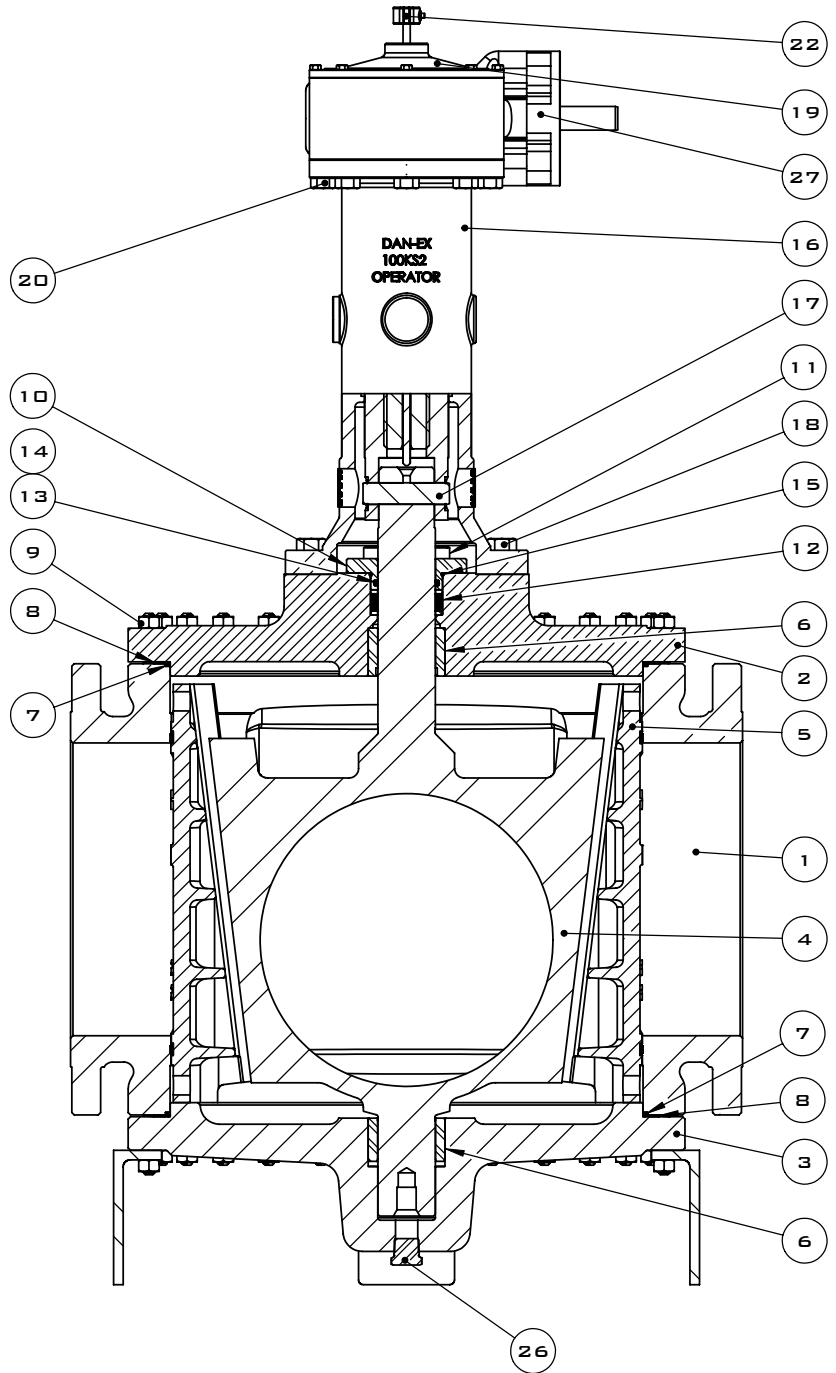
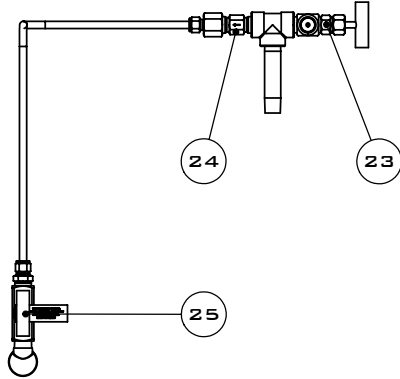
ITEM No.	DESCRIPTION
1	BODY
2	BONNET
3	LOWER PLATE
4	PLUG
5	SEATING SLIPS
6	TRUNNION BUSHING
7	"O" RING
8	GASKET
9	STUD & NUT
10	PACKING GLAND
11	CAP SCREW
12	PACKING SET
13	"O" RING
14	"O" RING BACKUP
15	"O" RING
16	OPERATOR ASSEMBLY
17	TRUNNION OPER. PIN
18	OPERATOR CAP SCREW
21	HANDWHEEL
22	INDICATOR FLAG - INDICATOR
23	MANUAL BODY BLEED VALVE
24	THERMAL RELIEF ASSEMBLY
25	THERMAL RELIEF ISOLATION VALVE
26	DRAIN PLUG

DAN-EX
FIG. No. 273 AND 275
RECTANGULAR PORT
ANSI CLASS: 300 AND 600



ITEM No.	DESCRIPTION
1	BODY
2	BONNET
3	LOWER PLATE
4	PLUG
5	SEATING SLIPS
6	TRUNNION BUSHING
7	"O" RING
8	GASKET
9	STUD & NUT
10	PACKING GLAND
11	CAP SCREW
12	PACKING SET
13	"O" RING
14	"O" RING BACKUP
15	"O" RING
16	OPERATOR ASSEMBLY
17	TRUNNION OPER. PIN
18	OPERATOR CAP SCREW
19	GEAR HOUSING ASSEMBLY
20	GEAR HOUSING CAP SCREW
21	HANDWHEEL
22	INDICATOR FLAG - INDICATOR
23	MANUAL BODY BLEED VALVE
24	THERMAL RELIEF ASSEMBLY
25	THERMAL RELIEF ISOLATION VALVE
26	DRAIN PLUG

DAN-EX
FIG. No. 291, 293 AND 295
REDUCED PORT
FIG. No. 201, 203 AND 205
FULL ROUND PORT
ANSI CLASS: 150, 300 AND 600



ITEM No.	DESCRIPTION
1	BODY
2	BONNET
3	LOWER PLATE
4	PLUG
5	SEATING SLIPS
6	TRUNNION BUSHING
7	"O" RING
8	GASKET
9	STUD & NUT
10	PACKING GLAND
11	CAP SCREW
12	PACKING SET
13	"O" RING
14	"O" RING BACKUP
15	"O" RING
16	OPERATOR ASSEMBLY
17	TRUNNION OPER. PIN
18	OPERATOR CAP SCREW
19	GEAR HOUSING ASSEMBLY
20	GEAR HOUSING CAP SCREW
22	INDICATOR FLAG - INDICATOR
23	MANUAL BODY BLEED VALVE
24	THERMAL RELIEF ASSEMBLY
25	THERMAL RELIEF ISOLATION VALVE
26	DRAIN PLUG
27	MOTOR ADAPTOR FLANGE

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