

MODEL 96330

Internal Safety Shutoff and Operating Valve

INSTRUCTION
MANUAL
96-330-2
(Rel. 09/01)

DESCRIPTION

The Shand & Jurs Model 96330 Internal Safety Valve is opened by pilot pressure from a remote source to permit product to flow in and out of storage tanks. The valve can be installed in the tank or the manifold line. The valve checks closed regardless of the pressures in the tank or line whenever pilot pressure is removed by any means. The balanced piston design resists opening due to line or tank pressure.

RECEIVING

This shipment is the property of the purchaser when it leaves our plant. Shand & Jurs cannot be responsible for any damage or breakage whatsoever. Claims for damage must be taken up with the transportation company. If this shipment is received in damaged condition, notify an agent of the transportation company at once and retain the box, packing, and contents as received. Shand & Jurs method of packing these goods has been proven by many years of experience. The transportation company has contracted to deliver this material to you in as good condition as they received it from us.

OPERATION

In Figure 2, operating pressure applied to the plunger causes the plunger to push the piston into the cylinder to open the valve for product flow. The spring closes the valve, Figure 1, whenever operating pressure is removed in any way. In emergencies, immediate shutoff of flow can be achieved by means of fusible plugs and frangible elements in the hydraulic line (Figure 6), or by a quick release mechanism on the hydraulic pressure source.

SPECIFICATIONS

PILOT OPERATING DATA:

Operating Pressure:

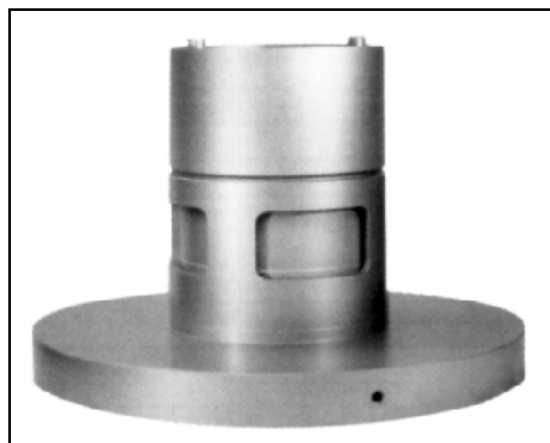
Range: 250 to 850 PSIG.
Maximum Pressure: 1000 PSIG.
Burst Pressure: 1500 PSIG.

Operating Fluid:

Mineral Oil or Synthetic
Fire Resistant Fluid.

MAIN VALVE DATA:

- * Maximum Product Pressure: 250/375 PSIG.
- * Product Temperature Range: -20° to 150°F.
- Flange (Table III): Raised Face to Match ANSI 150/300 class.
- * Extended ranges available on request.



MODEL 96330 INTERNAL SAFETY SHUTOFF AND
OPERATING VALVE

TABLE I

OPT. #	VALVE x FLANGE DESCRIPTION	HYDRAULIC OPERATING PRESSURE TO OPEN VALVE	PRODUCT/TANK PRESSURE (MAX) *
09	2" x 2"	500-700 psig	250 psig
11	3" x 3"	450-725 psig	250 psig
12	3" x 4"	450-725 psig	250 psig
13	4" x 4"	350-550 psig	250 psig
14	4" x 6"	350-550 psig	250 psig
15	6" x 6"	450-650 psig	250 psig
16	6" x 8"	450-650 psig	250 psig
17	8" x 8"	550-725 psig	250 psig
18	8" x 10"	550-725 psig	250 psig
19	8" x 14"	550-725 psig	250 psig
20	8" x 12"	550-725 psig	250 psig
21	8" x 16"	550-725 psig	250 psig
22	8" x 20"	550-725 psig	250 psig
23	8" x 18"	550-725 psig	250 psig
26	10" x 10"	600-775 psig	250 psig
37	8" x 8"	550-850 psig	375 psig
40	8" x 12"	550-850 psig	375 psig

TABLE II

X0	STD. SEAL
X1	ZERO LEAKAGE

* SEE PAGE 3 FOR SEAL OPTION

TABLE III

*X0	STD. FLANGE "J"	300 CLASS
X1	FULL FACE	300 CLASS
X2	STD. FLANGE "J"	150 CLASS

*X = 0 Standard RF (Cold Finish)

X = 1 Serrated RF

MODEL NUMBER EXPLANATION

MODEL 96330 XX XX XX

Size and Pressure _____ Seal _____ Flange _____
Table I Table II Table III

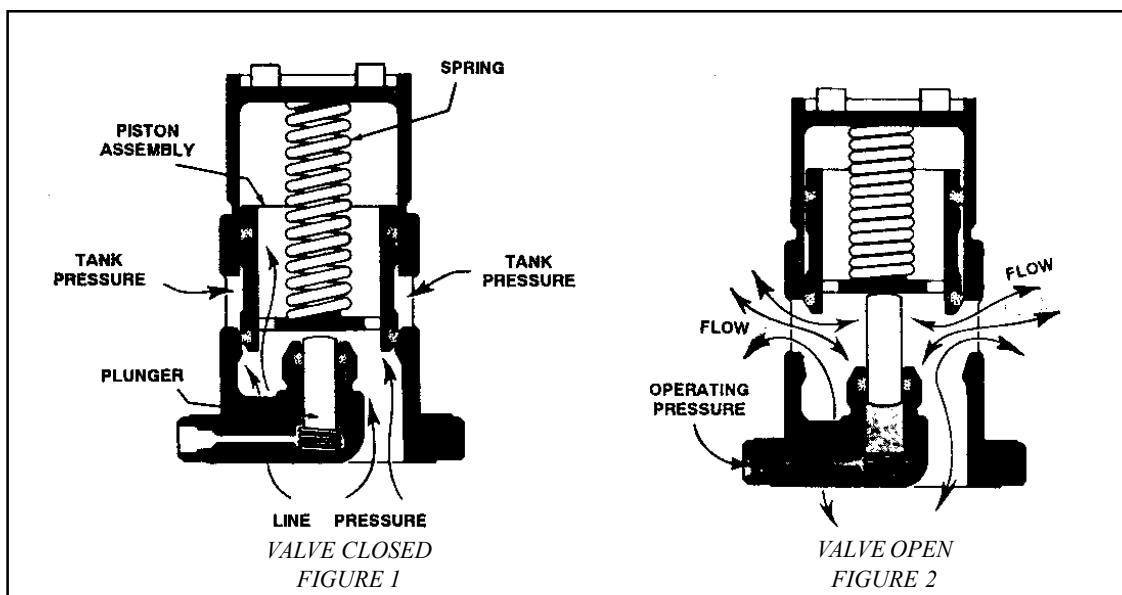


TABLE OF DIMENSIONS

TANK VALVE SIZE INCHES	DIMENSIONS-INCHES										TANK MTG.	IN-LINE MTG.
	A	B	C	D	E	F	FF	G	H	J	CV	
2	7-5/8	7/8	1-15/16	2-7/16	3-5/8	4-1/4	-	3-5/8	1-1/2	2	75	55
3	7-13/16	1-1/8	1-7/8	3-5/8	5-3/4	5-3/4	-	4-11/32	1-3/8	3	165	123
3 x 4	7-13/16	1-1/8	1-7/8	3-5/8	7	7	-	4-11/32	1-3/4	4	165	142
4	9-1/8	1-1/4	2-21/32	4-5/8	7	7	-	5-13/16	1-5/8	4	290	245
4 x 6	9-1/8	1-7/16	2-21/32	4-5/8	9-3/4	9-3/4	-	5-13/16	1-5/8	6	290	267
6	10-9/16	1-7/16	2-1/2	6-5/8	9-3/4	9-3/4	8-5/8	7-27/32	2-1/4	6	635	493
6 x 8	10-9/16	1-5/8	2-1/2	6-5/8	11-1/2	12	-	7-27/32	2-1/4	8	635	571
8	12-9/16	1-5/8	2-5/8	7-15/16	11-1/2	12	-	9-1/2	3-1/4	8	1120	878
8 x 10	12-9/16	1-7/8	2-5/8	7-15/16	14	14-1/8	13-1/4	9-1/2	3-1/4	10	1120	938
8 x 12	12-9/16	12-9/16	2-5/8	7-15/16	16-3/8	16-1/2	16-1/2	9-1/2	3-1/4	12	1120	952
8 x 14	12-9/16	2-1/8	2-5/8	7-15/16	19	19	-	9-1/2	3-1/4	14	1120	952
10	14-11/16	1-7/8	3-1/2	10	13-3/4	14-1/8	13-1/4	11-1/2	4-1/4	10	1612	1264

NOTE: FF= 150 Class Only
 F = 300 Class Only
 E = 300 Class Only

SUGGESTED DIMENSIONS FOR IN-LINE
CONNECTION OF FIGURE 5

TANK VALVE SIZE INCHES	SPECIAL ANSI 300 LB.R.F. FLANGE	MIN. PIPE SIZE	CONCENTRIC REDUCER INCHES	MIN. LENGTH	MAX.	STANDARD IN-LINE HSG. (FIGURE 4) 300 CLASS
N	P	Q	R	S		9606-10XXX
2	2"	5"	5 X 2	8-1/8	1-1/2	9606-1024X
3	3"	6"	6 X 3	8-1/4	1-3/4	9606-1025X
3 x 4	4"	8"	8 X 4	9-3/16	1-3/4	9606-1026X
4	4"	8"	8 X 4	9-3/4	2-1/2	9606-1027X
4 x 6	6"	10"	10 X 6	10-3/4	2-1/2	9606-1028X
6	6"	10"	10 X 6	11	2-5/16	9606-1029X
6 x 8	8"	14"	14 X 8	12-3/4	2-5/16	9606-1030X
8	8"	14"	14 X 8	14	2-7/16	9606-1031X
8 x 10	10"	14"	14 X 10	14	2-7/16	9606-1032X
8 x 12	12"	14"	14 X 12	14	2-7/16	9606-1034X
8 x 14	14"	14"	14 X 12	14	2-7/16	9606-1036X
10	10"	16"	-	-	-	9606-1070X

ITEM	DESCRIPTION	MATERIAL	PART NUMBER FOR VALVE SIZE					
			2"	3"	4"	6"	8"	10"
1	Pipe Plug	Plastic	8515653-006	851563-006	851563-006	851563-006	851563-006	851563-006
2	Base – Valve Size: 2", 3", 4", 6", 8", 10"	Stl.-Plated	SEE TABLE BELOW					
3 (10)	Gasket	Teflon	9633-10470	9633-10470	9633-10610	9633-10610	9633-10610	9633-10610
4 (5)	Seal Ring – Plunger	Teflon	9633-10440	9633-10440	9633-10580	9633-10580	9633-10580	9633-10580
6	Spring	Sp. Steel	9633-10790	9633-10870	9633-10880	9633-10890	9633-10900	9633-12890
7 (10)	Piston Seal	Viton	SP354-SC	SP354-SG	SP354-UM	SP354-UZ	SP354-VF	SP354-VJ
8	Piston	Stl.-Plated	9633-12740	9633-12680	9633-12600	9633-12540	9633-12490	9633-12810
9	Cylinder	Stl.-Plated	9633-12750	9633-12720	9633-12650	9633-11540	9633-11120	9633-12790
10	Plunger	Stainless Steel	9633-10480	9633-10480	9633-10620	9633-10720	9633-10800	9633-12880
13	Bonnet	Aluminum	9633-10450	9633-10450	9633-10590	9633-10590	9633-10590	9633-10590
14	Adapter Sleeve	Aluminum	9633-10460	9633-10460	9633-10600	9633-10600	9633-10600	9633-10600
15 (2)	Spring	Stainless Steel	9633-10490	9633-10490	9633-10630	9633-10630	9633-10630	9633-10630

NOTE: 1. Number in () is quantity of recommended spare parts for up to 10 units. Increase quantity in proportion for each 10 units.

2. Order parts from nearest office of Shand & Jurs. Provide Model Number, Serial Number and part number

*X	PART NUMBER FOR ITEM 7	
1	SP76-XX	BUNA
2	SP354-XX	VITON
3	SP519N-XX	NEOPRENE

* SEE TABLE II (PAGE 1)

** Check O-Ring compatibility before installing.

Item 2	Base	Material	150 Class Std. Flange	300 Class Full Flange	300 Class Std. Flange
↓	2"	Stl.-Plated	_____	9633-12730	9633-12760
	3"	Stl.-Plated	_____	9633-12700	9633-12900
	3" X 4"	Stl.-Plated	_____	_____	_____
	4"	Stl.-Plated	_____	9633-12620	9633-12660
	4" X 6"	Stl.-Plated	_____	_____	_____
	6"	Stl.-Plated	9633-12560	9633-12670	9633-12770
	6" X 8"	Stl.-Plated	_____	_____	_____
	8"	Stl.-Plated	_____	9633-12630	9633-12480
	8" X 10"	Stl.-Plated	9633-12530	_____	_____
	8" X 12"	Stl.-Plated	9633-12520	9633-12500	_____
	8" X 14"	Stl.-Plated	_____	_____	_____
	10" X 10"	Stl.-Plated	9633-12840	_____	9633-12830

* Must specify serrated RF flange finish if required

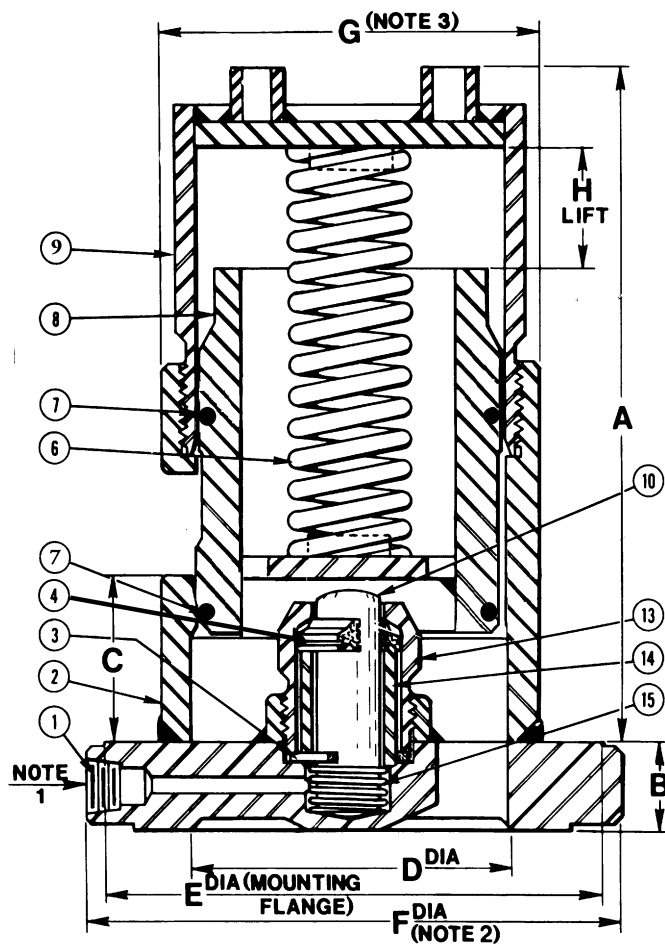


FIGURE 7. DIMENSION AND PARTS DRAWING

NOTES:.

1. Hydraulic pilot pressure input connection is 1/4 inch NPT.
2. Sizes with standard "J" flanges are furnished without bolt holes. Outside diameter of flange matches inner circle of bolt holes. Full size flanges are furnished with bolt holes and meet ANSI dimension standards (not shown).
3. The companion flange bore ("N" and "T" of figures 3 & 5). Must be equal to Dimension "G" plus clearance.
4. Mounting gaskets and hardware are to be supplied by others.
5. Valve flange matches "J" raised face ANSI 150/300 Class.

INSTALLATION

The Model 96330 Internal Safety Valve can be either tank or line mounted. The following procedures are typical and that employed in a given installation will depend on the requirements of the site. A gasket (supplied by others) is to be used on each side of the safety valve flange in all installations. In every case, the piping must include a positive shutoff valve when used as filling or discharge connection. Dimensions and other mounting information are given in the parts drawing.

MOUNTING

A. Tank Mounting

See Figure 3. Flange T is ANSI 150/300 Class raised face having a bore equal to dimension G plus clearance. The total thickness of the tank wall, flange T and gasket must not be greater than dimension C to allow the valve ports to clear the inside of the tank wall. Flange V is positive shutoff valve connection flange, pump flange, or pipe flange. Weld flange T to the tank shell. Then, assemble the valve, gaskets and flange V to flange T tightening all bolts to evenly compress the gaskets.

B. Line Mounting

The standard in-line housing is shown in Figure 4. See dimension drawing for part number. An alternate method for welding is shown in Figure 5. Flange N is ANSI 150/300 Class. Raised face with bore equal to Dimension G plus clearance. Flange V is the companion flange of a positive shutoff valve or pipe line. Distance from outer face of Flange N to point where pipe reducer begins to taper is not to be less than Dimension R. Thickness of Flange N plus gasket should not exceed Dimension S. Assemble as shown in Figure 5 and tighten all bolts to evenly compress the gaskets.

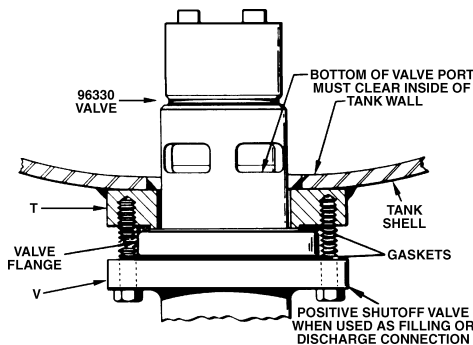


FIGURE 3

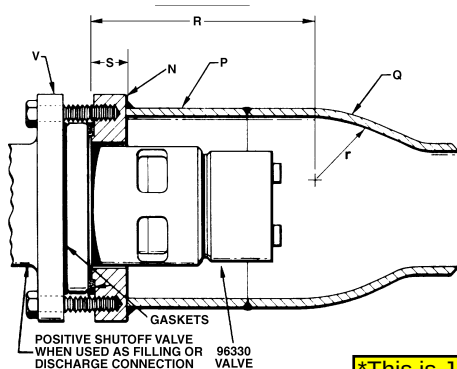


FIGURE 5

*This is JA7086-1 Fusible Plug Assy 1/8" NPT

PILOT LINE CONNECTIONS

Install Fuse-Strainer Assembly Part 091531 at the 1/4" NPT connection in the valve base as shown in Figure 6. Apply pipe dope sparingly to prevent loose dope from entering the valve.

Pipe or tubing must be clean and not release rust or scale which will impair the valves function. Blow out with air to remove chips and dirt before connecting to the valve and pilot pressure supply.

Where the valve is tank installed, the pilot pressure line should run completely around the tank from the valve to the operating fluid source. Distribute Fusible Plugs, Part JA7086-1 (1/8" NPT) at intervals around the tank in this line, such as 10 to 20 feet apart. Then, when a fusible plug is fused by heat, the Model 96330 Valve will automatically close due to loss of operating pressure. Also, a number of Frangible Elements, Part JA7088-1 shown in Figure 6 should be installed in this line at easily accessible points so that they can be broken manually by operating personnel and accomplish closure of the Model 96330 Valve.

Install air bleed vents at all high points in the pilot pressure line. These can be plugged tube or pipe tees (leg of tee up).

START UP

When all connections have been completed, apply the pilot pressure and then remove it in a cyclic manner to fully open and close the valve several times. Then, reapply pilot pressure and open each air bleed vent just enough to let air bubble out. Close the air bleeds and again operate the valve a few times by alternately applying and removing the pilot pressure. Crack the air bleeds again to release any entrapped air. Repeat this procedure

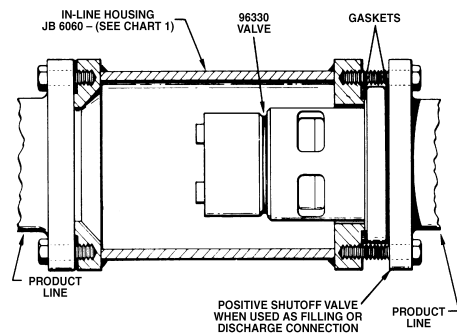


FIGURE 4

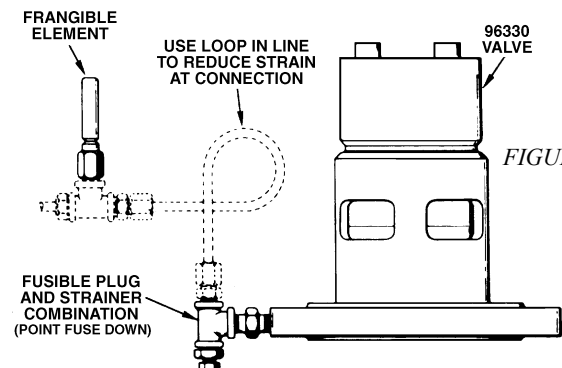


FIGURE 6

as often as necessary until all air is purged from the pilot line. In operation, the valve should not close until the pilot pressure is removed. See the trouble shooting chart for causes and remedies of improper operation.

TROUBLE SHOOTING CHART

SERVICE

When the Internal Safety Valve can be removed from the tank or in-line housing for service, take it to a clean service area where its parts can be protected from damage, etc. Refer to Figure 7.

DISASSEMBLY

- A. Handle the valve with care. Remove the strainer assembly from the connection in the valve base. Remove pipe nipple portion of assembly to examine the strainer screen. If clogged, replace with screen subassembly 091532.
- B. Clamp the valve by its mounting flange to a low work table so that a downwards force can be applied from above.
- C. Observe the following when performing this step:



CAUTION

When disengaging the valve cylinder, Item 9, from the base, apply a strong restraining force to prevent injury or damage due to the force exerted by the compressed spring, Item 6. Do not use a wrench on the side of the cylinder.

Place a rectangular bar between the two lugs on the top of the cylinder. Pushing downwards carefully turn the cylinder counterclockwise to remove it, approximately six (6) turns. Securely hold down the cylinder while unscrewing the last thread to allow it to spring slowly upward.

- D. With Cylinder 9 removed, lift Spring 6 and piston assembly out of base. Examine tapered seating surface of base and inside of cylinder for signs of wear, burrs, etc. Replace seals as required.
- E. To examine Plunger 10 and Seal 4, use a socket head wrench to remove Bonnet 13 pushing the plunger down if it is in the way of the wrench. Remove the plunger and Adapter Sleeve 14 from the bonnet and examine bonnet and seal for scores, nicks and other signs of wear.

CYLINDER AND BASE REPAIR

Light scratches and burrs can be removed by polishing with crocus cloth. Deeper grooves and burrs require part replacement.

PISTON SEAL REPLACEMENT

Piston Seal, Item 7.

Clamp Piston 8 snugly in a soft jaw vise only at the center recess groove. (Do not clamp at the outer surface.) Remove the existing O-Rings carefully. Inspect the grooves, deburr if necessary and clean. Polish with crocus cloth if rough surface is present.

Reassemble in reverse order.

PLUNGER SEAL RING

A scored plunger with only light scratches can be restored by polishing. Replace plungers with deep grooves or showing one-sided wear. Clean the interior of the valve including the hydraulic passage. Remove Spring 15 before cleaning.

Oil all parts lightly. Insert new seal ring 4, Adapter Sleeve 14 and Plunger 10 into Bonnet 13 with a new gasket 3 firmly placed in the end groove of the bonnet. Push the plunger flush with the top of the bonnet, oil the bonnet threads then screw the bonnet over Spring 15 until seated. Use a hexagon socket head "T" wrench, apply 1000 inch-pounds torque to seal the gasket and provide a metal-to-metal sealed joint at the bonnet base.

TROUBLE SHOOTING

SYMPTOM	CAUSES AND REMEDIES
Valve does not open with pilot pressure applied.	Clogged strainer. Clean or replace element, Part# 091532. Leaky pilot pressure piping. Tighten connections, etc. Faulty pilot pressure source. Repair. Worn plunger seal - See the Service Section to replace the seal.
Valve opens when pilot pressure is first applied, but then closes.	Leaky pilot pressure piping. Eliminate cause(s) of leak. Faulty pilot pressure source. Repair. Worn Seal Ring Item 4. See the Service Section to replace ring.
Product slowly leaks through the closed valve. See Note 1.	Worn Piston Seals, Item 7. See the Service section to replace the ring.

NOTES:

1. The Model 96330 Internal Safety Valve Option II 00 is not bubble-tight. A very small amount of product leakage may always be present. However, if experience shows that the leakage has increased over a period of time, check for the cause of this symptom.
2. A regular schedule should be set up for cleaning the strainer and checking for piping leaks, etc. to reduce the possibility of troubles such as those listed on the chart above.

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