

The RESUN Carbon Steel Lubricated Plug Valve is specifically designed for a range of temperatures and pressures exceeding the service limitations of cast iron and bronze. Cast carbon steel used in RESUN Valves exceeds minimum applicable ASTM specifications. All flanged end valves 2" and larger conform to API 6D and are monogrammed accordingly. All valves can be provided to conform to NACE MR0175 specifications for H<sub>2</sub>S service.

RESUN Carbon Steel Plug Valves are available with a pressure balanced plug valve design or a standard plug design.

**Pressure balanced plug valves are available in:**

ANSI Classes 150,300 and 600 in sizes 2" to 12"

**MR-01-75 Standard "non-pressure" balanced plug valves are available in:**

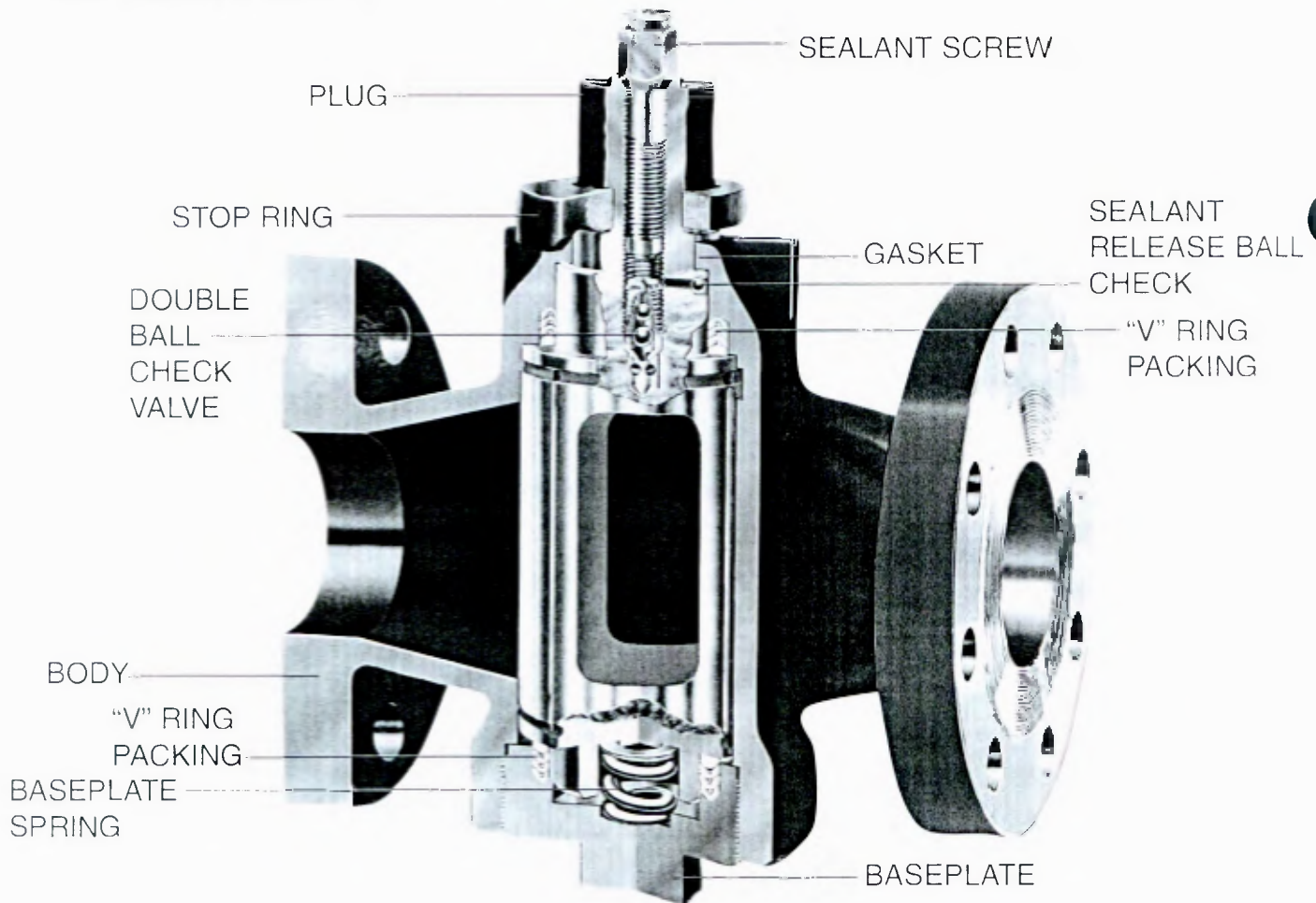
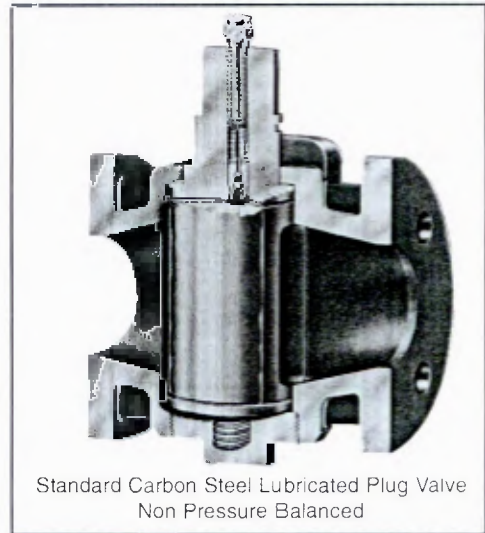
ANSI Class 150 in sizes 1/2"-8"

(1/2"-8" socket and butt weld end connections.)

ANSI Class 300 in sizes 1/2" -1 1/2"

(1/2"-8" with socket and butt weld connections.)

ANSI Class 600 in sizes 1/2"-2"



**Carbon Steel Pressure Balanced Cylindrical Design**

## Pressure Balanced Plug

End thrust, due to line pressure, is eliminated in the RESUN Carbon Steel Lubricated Plug Valves by means of self-expanding packing located at both ends of the plug. This feature reduces the operating effort and gives an easy turning valve under high pressure...with no sticking. The unique PTFE gasket on the head seat of 3" and larger pressure balanced sizes, double seals against the atmosphere and the inherent lubricity of the gasket further eases operation. All RESUN Valves are quarter-turn operation valves. They normally close in a clockwise direction and open in a counterclockwise direction.

## Cylindrical Plug (regular and full opening ports)

The RESUN Carbon Steel Lubricated Plug Valve is designed with a cylindrically shaped plug to provide a full pipe area rectangular port, as well as a regular opening rectangular port. Full area round plugs are available to accommodate pigging and tapping applications. Straight through flow provides greater operating efficiency. All seating surfaces are protected by sealant and are sealed away from fluid flow in open position. The fluid passage has smooth, flowing sweeps, thus minimizing turbulence and pressure drop. RESUN Valves may be installed in any position and fit into the smallest possible space. No special tools for installation or operation are required.

## Construction

The plug of the RESUN Carbon Steel Valve is cylindrical and is fitted to the bore of the body with a clearance of only a few thousandths of an inch. The plug has a small vertical clearance, but it is held in firm contact with the narrow shoulder at the top of the body by the plug baseplate spring. Because of low operating torque, wrench operation is standard through 6" sizes. Enclosed worm gear operation is available for 6" and larger sizes (4" full port and round port).

## Operation

Some Carbon Steel Valves have a separate stop ring attached to the external stem of the plug which engages stops on the body, so that turning is limited to 90°. A raised indicator is cast on the top of the valve stem in line with the ports of the plug to show the direction in which the ports are turned. With straightway valves, when the indicator is in line with the pipe, the valve is open; when the stem is turned 90° clockwise so that the indicator is crosswise to the pipe, the valve is closed.

## Lubrication

Sealant forced into the sealant chamber in the stem of the valve passes through a double ball check valve which prevents reverse flow so that the valve can be lubricated even when subject to line pressure. Below the ball check valve the sealant moves outward through four equally spaced cross holes to sealant grooves in the seating surface of the plug. Two of the cross holes connect directly with the grooves. The other two cross holes are connected with the grooves only when the plug is in the full open or full closed position. This construction prevents lubricant from being forced into the line when the valve is partly open.

## Sealant Release

Carbon steel pressure balanced designed valves release excess sealant by a slightly different method from that used in RESUN cast iron valves. When the vertical grooves and the space inside the "V" ring packings at each end of the plug are filled, increased pressure in the sealant chamber forces sealant out through the side hole just above the ball check valve. (The check valve in this hole serves only to prevent reverse flow such as might occur if the upper "V" ring packing was not completely effective.) Sealant pressure in the space above the upper "V" ring packing pushes the plug down slightly against the plug baseplate spring. This allows sealant to escape to the atmosphere around the neck of the plug giving visible indication that the valve is filled. The sealant release feature of RESUN valves prevents buildup of excessive sealant pressure inside the valve or the forcing of sealant into the line.

## Pressure Sealing

After the lubricant system has been filled, turning the plug a few times will spread the sealant over the seating surfaces in a thin, pressure-tight film. The "V" ring packing, in the pressure balanced design, prevents line pressure from getting beyond the shoulders at the end of the seating surfaces so that there is no pressure under the plug. The packing does not, however, prevent the plug from shifting sideways in response to pressure differential in the ports of the body. When the valve is closed, the side thrust of the line pressure on the plug moves it downstream slightly, compressing the sealant film but not displacing it. This very thin film of relatively stiff sealant has increased resistance to displacement more or less in proportion to the line pressure. When the valve is opened, the pressure on the plug is equalized, and the sealant is redistributed in a uniform film all around the plug.

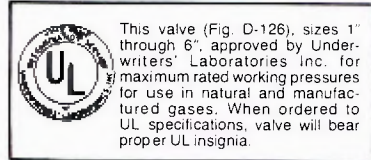


## DIMENSIONAL DATA—Full Pipe Area, Rectangular Port Valves (continued)

Fig. D-126—Wrench Operated

Fig. D-126-WGA—Worm Gear Operated

200 PSI WOG 400 PSI TEST—125 PSI SWP 1"-12" Flanged, Short Pattern



ALL SIZES IN INCHES E=NO. AND SIZE OF BOLTS F=DIAMETER OF BOLT CIRCLE  
K=CLEARANCE TO REMOVE SEALANT SCREW L=DIAMETER OF SEALANT STICK

SIZE	B	C	D	E	F	H	J	L	WRENCH OPERATED					WORM GEAR OPERATED						
									G	K	M	N	WRENCH	WT.	K	R	S	T	W	
1	5½	4¼	7/16	4-½	3¾	1¾	2½	¾	3¾	5¾	15/16	1½	A	7						
1¼	6	4¾	½	4-½	3½	2¾	3½	¾	4	6	15/16	1½	A	12						
1½	6½	5	9/16	4-½	3¾	2¾	3½	¾	4	6	15/16	1½	A	13						
2	7	6	¾	4-¾	4¾	3¾	4¼	¾	5½	8	1¼	1¾	C	24						
2½	7½	7	11/16	4-¾	5½	3¾	5	¾	5¾	8¼	1¼	1¾	C	33						
3	8	7½	¾	4-¾	6	4¼	6¼	¾	6¾	10½	1¾	1¾	F	50						
4	9	9	15/16	8-¾	7½	5¾	7½	¾	7½	11¼	1¾	1¾	H-24	78	149/16	10½	615/16	29/16	12	
5	10	10	15/16	8-¾*	8½	6¾	9¾	¾	8½	12¼	1¾	1¾	H-30	120	159/16	10½	713/16	29/16	12	
6	10½	11	1	8-¾*	9½	6¾	10¾	¾	9½	12¾	1¾	1¾	H-36	170	161/16	10½	815/16	3¾	20	
8	11½	13½	1½	8-¾*	11¾	9	13½	¾	12¾	16¾	27/16	27/16	L-48	341	1913/16	13¾	1215/16	4½	20	
10†	13	16	13/16	12-7/8*	14¼	10¾	15½	¾	15½	19¾	3	3¾	M-60	465	223/16	13¾	141/16	4¾	20	
12†	14	19	1¼	12-7/8*	17	11¾	16½	¾	16	20¼	3	3¾	M-72	553	23	13¾	151/16	41/16	20	

Valves 2" through 12" interchange with API Pipeline Valve Standard 6-D, 175 PSI class, and with ANSI 125 PSI SWP Cast Iron Flange Wedge Gate Valves (Std. B16.10).

Flanges are drilled to ANSI 125 PSI Cast Iron Flange Standard unless otherwise specified. No deduction for valves faced only. Bolt holes are drilled 1/8" larger than bolts.

Sizes ½" through 6" equipped as standard with stainless steel baseplate springs; other sizes on application. Inconel springs on special order for sour gas or sour oil service.

\*Includes 4 tapped holes this size on each flange, 2 at top and 2 at bottom, for cap screws or studs.  
†Has some reduction in port area.

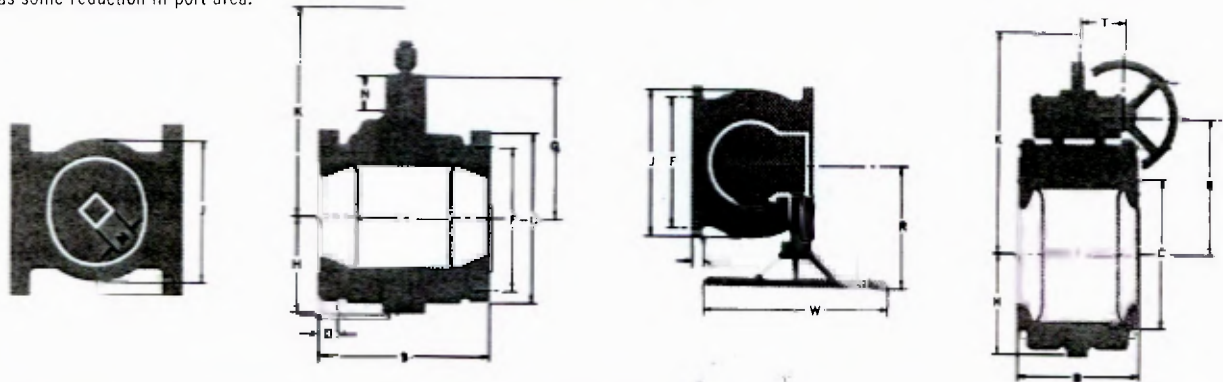


Fig. D-151—Wrench Operated, Fig. D-151-WGA—Worm Gear Operated

200 PSI WOG 400 PSI TEST—125 PSI SWP 2"-12" Flanged, Regular Pattern

150 PSI WOG 300 PSI TEST—100 PSI SWP 14"-20" Flanged, Regular Pattern

ALL SIZES IN INCHES E=NO. AND SIZE OF BOLTS F=DIAMETER OF BOLT CIRCLE  
K=CLEARANCE TO REMOVE SEALANT SCREW L=DIAMETER OF SEALANT STICK

SIZE	B	C	D	E	F	H	J	L	WRENCH OPERATED					WORM GEAR OPERATED						
									G	K	M	N	WRENCH	WT. (LB.)	K	R	S	T	W	
2	7½	6	¾	4-¾	4¾	3¾	4¼	¾	5½	8	1¼	1¾	C	21						
2½	8¼	7	11/16	4-¾	5½	3¾	5	¾	5¾	8¼	1¼	1¾	C	28						
3	9	7½	¾	8-¾	6	4¼	6¼	¾	6¾	10½	1¾	1¾	F	45						
4	12	9	13/16	8-¾	7½	5¾	7½	¾	7½	11¼	1¾	1¾	H-24	83	149/16	10½	615/16	29/16	12	
5	14	10	15/16	8-¾	8½	6¾	9¾	¾	8½	12¼	1¾	1¾	H-30	135	159/16	10½	713/16	29/16	12	
6	15½	11	1	8-¾*	9½	6¾	10¾	¾	9½	12¾	1¾	1¾	H-36	183	161/16	10½	815/16	3¾	20	
8	18	13½	1½	8-¾*	11¾	8¾	16½	¾	12¾	16¾	27/16	27/16	L-48	422	1913/16	13¾	1215/16	4½	20	
10	21	16	13/16	12-7/8	14¼	10¾	18¾	¾	15½	19¾	3	3¾	M-60	755	229/16	13¾	141/16	4¾	20	
12	24	19	1¼	12-7/8	17	12¾	22	¾							24¾	13¾	171/16	6	20	
14	27	21	1¾	12-1	18¾	14¼	23	¾							25¾	13¾	181/16	6	20	
16	30	23½	17/16	16-1	21¼	17	30	*							*	173/16	2015/16	6	20	
18	34	25	19/16	16-1½	22¾	17	30	*							*	173/16	2015/16	6	20	
20	36	27½	11/16	20-1½	25	19¾	34	*							▼	16½	2315/16	6	20	

Flanges are drilled to ANSI 125 PSI Cast Iron Flange Standard unless otherwise specified. No deduction for valves faced only. Bolt holes are drilled 1/8" larger than bolts.

Sizes 2" through 6" equipped as standard with stainless steel baseplate springs; other sizes on application. Inconel springs available on special order for sour gas or sour oil service.

\*Sealant screw not used in valves of current manufacture in this size.