

# Design 1018S Sliding-Stem Control Valve

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W8488

Figure 1. Design 1018S Valve with Type 3024C Actuator

## Introduction

### Scope of Manual

This instruction manual includes installation, maintenance and parts information for the Design 1018S control valve. The standard bonnet allows a range of Fisher actuators to be fitted and reference should be made to the relevant instruction manuals for details of these and any other Fisher accessories which may be fitted.

No person may install, operate or maintain a Design 1018S valve without first (1) being fully trained and qualified in valve, actuator and accessory installation, operation and maintenance, and (2) carefully reading and understanding the contents of this manual. If you have any questions about these instructions contact your Fisher sales office before proceeding.

### Description

The globe-style Design 1018S valve (figure 1) is a metric designed valve with stem guiding and push-down-to-close action in sizes DN15, 25, 40, 50, 80 and 100 (1/2, 1, 1-1/2, 2, 3 and 4 inches). It has a threaded seat ring and metal-to-metal seating for all general applications over a wide variety of pressure drops and temperatures, or metal-to-PTFE seating for positive shutoff at temperatures up to 232°C (450°F).

### Specifications

Specifications for the Design 1018S valve are shown in tables 1 and 2. Some information about your valve will appear on the valve nameplate. Where an actuator is fitted the nameplate will be attached to the actuator. If the valve has been supplied without an actuator the nameplate will be wired to the valve.



Table 1. Specifications

Valve Size	DN	15	25	40	50	80	100
	inch	½	1	1½	2	3	4
Flow Direction	Flow up standard						
Flow Characteristics	Linear and equal percentage						
Plug Styles	Full capacity metal seat trim or PTFE seat						
Yoke Boss Size	mm	54				71	
	inch	2 1/8				2 13/16	
Valve Stem Diameter	mm	12				16	
	inch	0.472				0.630	
Valve Stem Thread	mm	M12 x 1.75				M16 x 2.0	
Approximate Weights (PN & Class)	kg	9	10	16	19	37	58
	lb	20	22	35	42	82	128

Table 2. End Connections, Shutoff Classifications and Pressure-Temperature Class Designations

Specification	Class	PN
End Connections (Flanged)	Steel and stainless steel valves: Raised face (RF) Class 150 and 300 per ASME B16.5 (and prEN1759-1)	Steel and stainless steel valves: PN10, 16, 25, 40 per EN1092-1 Raised Face Type B (formally DIN 2526 Form C) Groove Type D (formally DIN 2512)
Shutoff Classification	Per IEC 60534-4 and ANSI/FCI 70-2 Metal Seat - Class IV (standard) Metal Seat - Class V (optional) PTFE Seat - Class VI (optional)	
Maximum Inlet Pressure and Temperatures <sup>(1)</sup>	Steel and stainless steel valves Class 150 or 300 per prEN1759-1 and ASME B16.34	Steel and stainless steel valves PN10, 16, 25, 40 per EN1092-1

1. The pressure/temperature limits in this manual and any applicable standard or code limitation for valve should not be exceeded.

## Installation

## CAUTION

### WARNING

Always wear protective gloves, clothing, and eyewear when performing any installation operations to avoid personal injury.

Personal injury or equipment damage caused by sudden release of pressure or bursting of pressure relating parts might result if service conditions exceed those for which the product was intended. To avoid injury or damage, provide a relief valve for over pressure protection as required by government or accepted industry codes and good engineering practices.

Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

This valve is intended for a specific range of pressures, temperatures and other application specifications. Applying different pressure and temperatures to the valve could result in parts damage, malfunction of the control valve or loss of control of the process. Some body/trim material combinations are limited in their pressure drop and temperature ranges. **Do not expose this product to service conditions or variables other than those for which the product was intended.** If you are not sure what these conditions are you should contact Fisher for more complete specifications. Provide the product serial number (shown on the nameplate) and all other pertinent information.

Fisher does not assume final responsibility for the selection, use, or maintenance of any product. Final responsibility for the selection, use,

and maintenance of any Fisher product remains with the purchaser and end-user.

 **WARNING**

If you move or work on an actuator fitted to the valve with loading pressure applied, keep your hands and tools away from the stem travel path to avoid personal injury. Be especially careful when removing the stem connector to release all loading on the actuator stem whether it be from air pressure on the diaphragm or compression in the actuator springs. Likewise take similar care when adjusting or removing any optional travel stop. Refer to the relevant actuator Maintenance Instructions.

If hoisting the valve take care to prevent people from being injured in case the hoist or rigging slips. Be sure to use adequately sized hoists and chains or slings to handle the valve.

1. Before installing the valve, inspect it to be certain that the valve body cavity is free of all foreign material. Clean out all pipelines to remove scale, welding slag and other foreign material.
2. The control valve assembly may be installed in any orientation unless limited by seismic criteria. However, the normal method is with the actuator vertical above the valve. Flow through the valve must be in the direction indicated by the arrow cast on the valve.
3. Use accepted piping practices when installing the valve in the pipeline. Use a suitable gasket between the valve and the pipeline flanges.
4. With a leak-off bonnet construction, remove the pipe plug to hook up the leak-off piping.
5. If continuous operation is required during inspection or maintenance, install isolating valves either side of the control valve with a bypass valve to control the flow while the control valve is being worked on.
6. If the actuator and valve are shipped separately, refer to the appropriate instruction manual for the actuator mounting procedure.

 **WARNING**

Personal injury could result from packing leakage. Valve packing is tightened before shipment; however the packing might require some readjustment to meet specific service conditions.

## Maintenance

 **WARNING**

Avoid personal injury or property damage from sudden release of process pressure or bursting of parts. Before performing any maintenance operations:

- Always wear protective gloves, clothing, and eyewear when performing any maintenance operations to avoid personal injury.
- Disconnect any operating lines providing air pressure, electric power or a control signal to the actuator. Be sure the actuator cannot suddenly open or close the valve.
- Use bypass valves or completely shut off the process to isolate the valve from the process pressure. Relieve the process pressure from both sides of the valve.
- Depending on the actuator construction, it will be necessary to manage the pneumatic actuator loading pressure and any actuator spring pre-compression. It is essential to refer to the relevant actuator instruction manual to ensure safe removal of the actuator from the valve.
- Use lock-out procedures to be sure that the above measures stay in effect while you work on the equipment.
- The valve packing box may contain process fluids that are pressurized, even when the valve has been removed from the pipeline. Process fluids may spray out under pressure when removing the packing

# 1018S Valve

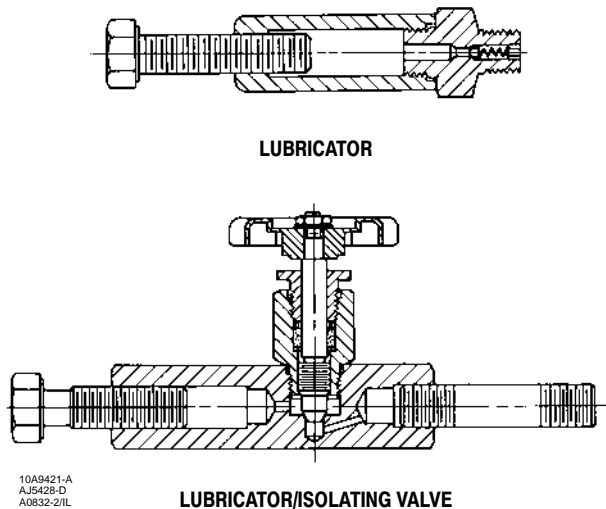


Figure 2. Lubricator and Lubricator/Isolating Valve (optional)

**hardware or packing rings, or when loosening the packing box pipe plug.**

- **Check with your process or safety engineer for any additional measures that must be taken to protect against process media.**

### Note

**Whenever a gasket seal is disturbed by removing or shifting gasketed parts, install a new gasket during reassembly. This ensures a good gasket seal because the used gasket may not seal properly.**

## Packing Lubrication

If a lubricator, or lubricator and isolating valve (figure 2) is provided for PTFE/composition or other packings that require lubrication, it is installed in a tapped bonnet. Use a silicon based lubricant. Packing used in oxygen service or in processes with temperatures over 260°C (500°F) should not be lubricated. To operate the lubricator, turn the screw clockwise to force the lubricant into the packing box. The lubricator/isolating valve operates the same way except the isolating valve must first be opened and then closed after the lubrication has been completed.

## Packing Maintenance

Key numbers refer to figures 3, 4, 5, and 8.

For spring-loaded single PTFE V-ring packing, the packing spring (key 8.10) maintains a sealing force on the packing. If leakage is noted around the top bushing (key 8.2) check to be sure that the packing flange (key 8.1) is touching the bonnet (key 2). If the packing flange is not touching the bonnet, tighten the packing flange cap screws (key 8.3) until the packing flange is against the bonnet. If leakage cannot be stopped in this manner proceed to the replacing packing procedure.

If there is unacceptable packing leakage with other than spring-loaded packing, first try to limit the leakage and establish a stem seal by tightening the packing flange cap screws (key 8.3) to at least the minimum recommended torque in table 3. However do not exceed the maximum recommended torque in table 3 or excessive friction may result. If the packing (key 8) is relatively new and tight on the stem and tightening the packing flange nuts does not stop the leakage, it is possible that the stem is worn or nicked so that a seal cannot be made. The surface finish of a valve stem is critical for making a good packing seal. If the leakage comes from the outside diameter of the packing it is possible that the leakage comes from nicks or scratches around the packing box wall. While replacing the packing, as in the numbered steps below, inspect the valve stem and packing box wall for nicks and scratches.

### Note

**If the valve has ENVIRO-SEAL® packing installed, refer to the instruction manual entitled ENVIRO-SEAL Packing System for Sliding Stem Valves, Form 5306, for packing instructions. Figure 5 in this manual shows typical ENVIRO-SEAL packing systems.**

## Replacing Packing

These instructions refer primarily to valves fitted with plain bonnets. When replacing packing in an extension or bellows bonnet you should refer to the relevant section under Bonnet Constructions later in this manual for details on disassembly and reassembly of valves with extension and bellows bonnets.

1. Isolate the control valve from the line pressure, release pressure from both sides of the valve body and drain the process media from both sides of the valve. If using a power actuator, also shut off all pressure lines to the power actuator and release all

pressure from the actuator. Use lock-out procedures to be sure that the above measures stay in effect while you work on the equipment.

2. Disconnect the operating lines from the actuator and any leak-off piping from the bonnet. Disconnect the stem connector and then remove the actuator from the valve by unscrewing the yoke lock nut (key 11, figure 8). Refer to the appropriate actuator instruction manual for details.

 **WARNING**

**To avoid personal injury or property damage by uncontrolled movement of the bonnet, loosen the bonnet bolting by following the instructions in the next step. Do not remove a stuck bonnet by pulling on it with equipment that can stretch or store energy in any other manner. The sudden release of stored energy can cause uncontrolled movement of the bonnet.**

**Note**

**The following step also provides additional assurance that the valve body fluid pressure has been relieved.**

3. Hex nuts (key 9.3) attach the bonnet (key 2) to the valve body (key 1). Loosen these nuts approximately 3mm (1/8 inch). Then loosen the body-to-bonnet gasketed joint by either rocking the bonnet or prying between the body and bonnet. Work the prying tool around the bonnet until the bonnet loosens.

**CAUTION**

**Avoid damaging the seating surface caused by the valve plug and stem assembly dropping from the bonnet after being lifted part way out. When lifting the bonnet temporarily install a valve stem locknut on the valve stem. This locknut will prevent the valve plug and stem assembly from dropping out of the bonnet.**

4. If no fluid leaks from the joint, remove the bonnet nuts (key 9.3) completely and carefully lift off the bonnet complete with plug and stem assembly.

5. Loosen the packing flange cap screws (key 8.3) so that the packing is not tight on the valve stem.

Remove any travel indicator parts and stem locknuts from the valve stem threads.

6. Set the bonnet and stem assembly on a protective surface to prevent damage to the bonnet gasket surface and plug seat. Separate the plug and stem assembly from the bonnet.

7. Remove the bonnet gasket (key 9.1) and cover the opening of the valve to protect the gasket surface and prevent foreign matter from getting into the valve cavity.

8. Remove the packing flange cap screws, packing flange and top bushing (keys 8.3, 8.1 and 8.2). Carefully push out all the remaining packing box parts from the bonnet using a rounded rod or other tool which will not scratch the packing box wall or bottom guide bushing. Clean the packing box and the metal packing box parts.

9. Inspect the valve stem threads and packing box surfaces for any sharp edges that might cut the packing. Scratches or burrs could cause packing box leakage or damage the new packing. If the surface condition cannot be improved by light sanding, replace the damaged parts.

10. Remove the covering protecting the valve cavity and install a new bonnet gasket (key 9.1) making sure that the gasket seating surfaces are clean and smooth.

**Note**

**The bolting procedures in step 11 include, but are not limited to, ensuring that the bolting threads are clean and that the nuts are evenly tightened on the studs in a crisscross pattern. Tightening one nut may loosen an adjacent nut. Repeat the crisscross tightening pattern several times until each nut is tight and the body-to-bonnet seal is made. When the operating temperature has been reached perform the torque procedure again.**

11. Lubricate the bonnet studs (key 9.2), nuts (key 9.3) and the surface between the nuts and bonnet with a suitable lubricant. Carefully slide the valve plug into the bonnet, slide the bonnet onto the bolts (key 9.2) and secure with the stud bolt nuts (key 9.3). Using accepted bolting procedures, tighten the body-to-bonnet joint to withstand test pressures and application service conditions. Use the bolt torques in table 4 as guidelines unless accepted bolting procedures dictate otherwise.

Table 3. Recommended Torque for Packing Flange Cap Screws

Valve Size		Valve Stem Diameter		Class	PN	Graphite Packing (square)				PTFE-Graphite Packing (square)			
						Min Torque		Max Torque		Min Torque		Max Torque	
DN	inch	mm	inch			N•m	lbf•in	N•m	lbf•in	N•m	lbf•in	N•m	lbf•in
---	1/2, 1, 1-1/2, 2	12	0.472	150	---	2.5	22	3.8	34	1.9	16	2.8	25
				300	---	3.4	30	5.1	45	2.5	22	3.7	33
15, 25, 40 & 50	---			---	10 - 40	3.1	27	4.6	41	2.3	20	3.4	30
---	3 & 4	16	0.630	150	---	3.7	31	5.5	46	2.3	21	3.5	31
				300	---	4.9	41	7.3	62	3.1	27	4.7	41
80	---			---	10 - 40	4.5	38	6.7	57	2.8	25	4.2	38
100	---			---	10 - 16	3.5	31	5.3	47	2.2	20	3.4	30
				---	25 - 40	4.5	38	6.7	57	2.8	25	4.2	38

Table 4. Body-to-Bonnet Torque Values for Plain, Extension, and Bellows Bonnets

Valve Size		Body-to-Bonnet (Plain Bonnet) Body-to-Extension (Extension & Bellows)								Extension-to-Bonnet (Extension and Bellows Bonnets)							
		Body Studs (Key 9.2)				Bonnet Cap-Screws (Key 9.7)											
Bolt Material		B7 and B8M CL2		1.1181		1.7709		A2-70		B7 and B8M CL2		1.1181		1.7709		A2-70	
DN	Inch	N•m	lbf•in	N•m	lbf•in	N•m	lbf•in	N•m	lbf•in	N•m	lbf•in	N•m	lbf•in	N•m	lbf•in	N•m	lbf•in
15	1/2	82	60	39	29	77	57	63	46	82	60	39	29	77	57	63	46
25	1	82	60	39	29	77	57	63	46	82	60	39	29	77	57	63	46
40	1-1/2	171	126	94	69	185	136	151	111	82	60	39	29	136	100	63	46
50	2	171	126	94	69	185	136	151	111	82	60	39	29	136	100	63	46
80	3	171	126	94	69	185	136	151	111	171	126	94	69	185	136	151	111
100	4	171	126	94	69	185	136	151	111	171	126	94	69	185	136	151	111

12. Install the new packing and the metal packing box parts according to the appropriate arrangement in figure 3, 4, or 5. Place a smooth-edged pipe over the valve stem and gently tap each soft packing part into the packing box.

13. Slide the top bushing and packing flange (keys 8.2 and 8.1) into position. Lubricate the packing flange cap screws (key 8.3), including the underside of the head of the cap screws. Fit the cap screws.

### Note

**The torque values discussed in step 14 and shown in table 3 are recommended guidelines only and are presented as a starting point for this procedure. Tightening the packing flange nuts to a torque value that exceeds the table guidelines, in order to obtain a seal, may indicate other problems.**

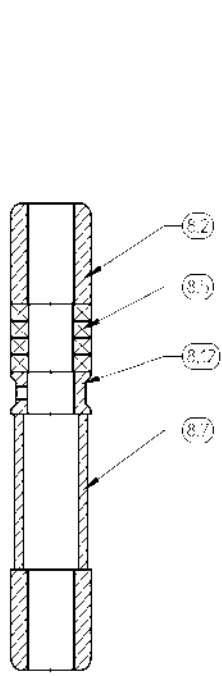
14. For spring-loaded PTFE V-ring packing tighten the packing flange cap screws until the flange (key 8.1) contacts the bonnet.

15. For graphite packing tighten the packing flange cap screws to the maximum recommended torque shown in table 3. Then loosen the packing flange cap screws and retighten to the minimum recommended torque shown in table 3.

**For ENVIRO-SEAL packing** refer to the instruction manual entitled ENVIRO-SEAL Packing System for Sliding Stem Valves, Form 5306, for packing instructions.

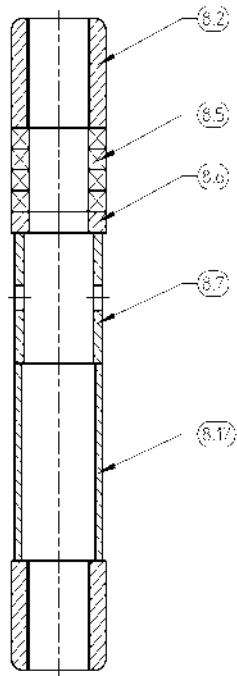
**For other packing types** tighten the packing flange cap screws alternately in small equal increments until one of the cap screws reaches the minimum recommended torque shown in table 3. Then, tighten the remaining flange cap screw until the packing flange is level and at a 90 degree angle to the valve stem.

16. Mount the actuator on the bonnet (key 2) and reconnect the actuator and valve plug stem according to the procedure in the appropriate actuator instruction manual. Check for leakage around the top bushing when the control valve assembly is first put in to service. Retighten the packing flange cap screws as required.



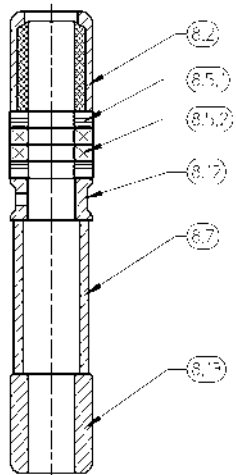
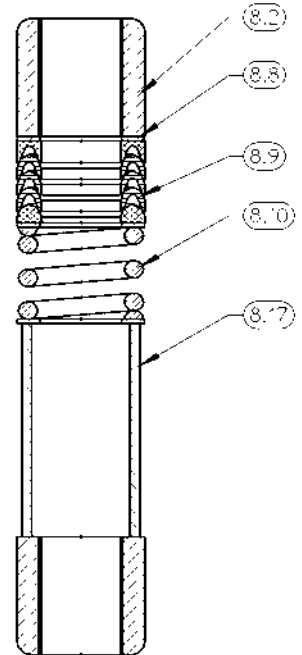
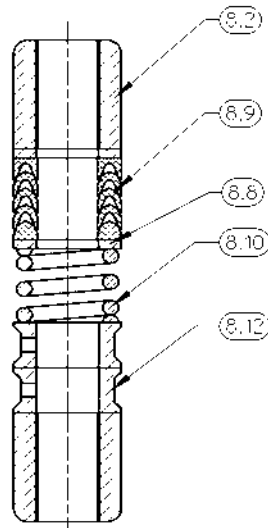
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**SINGLE PTFE-GRAPHITE PACKING**



g00181

**SINGLE V-RING PACKING**



g00182

**SINGLE GRAPHITE PACKING**

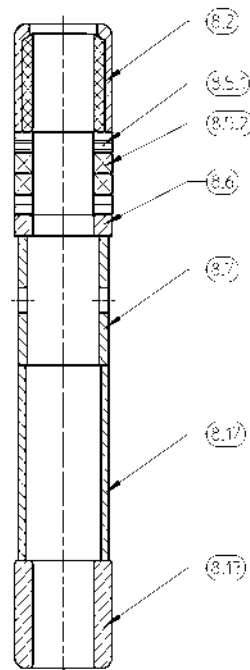


Figure 3. Typical Single Packing Arrangements

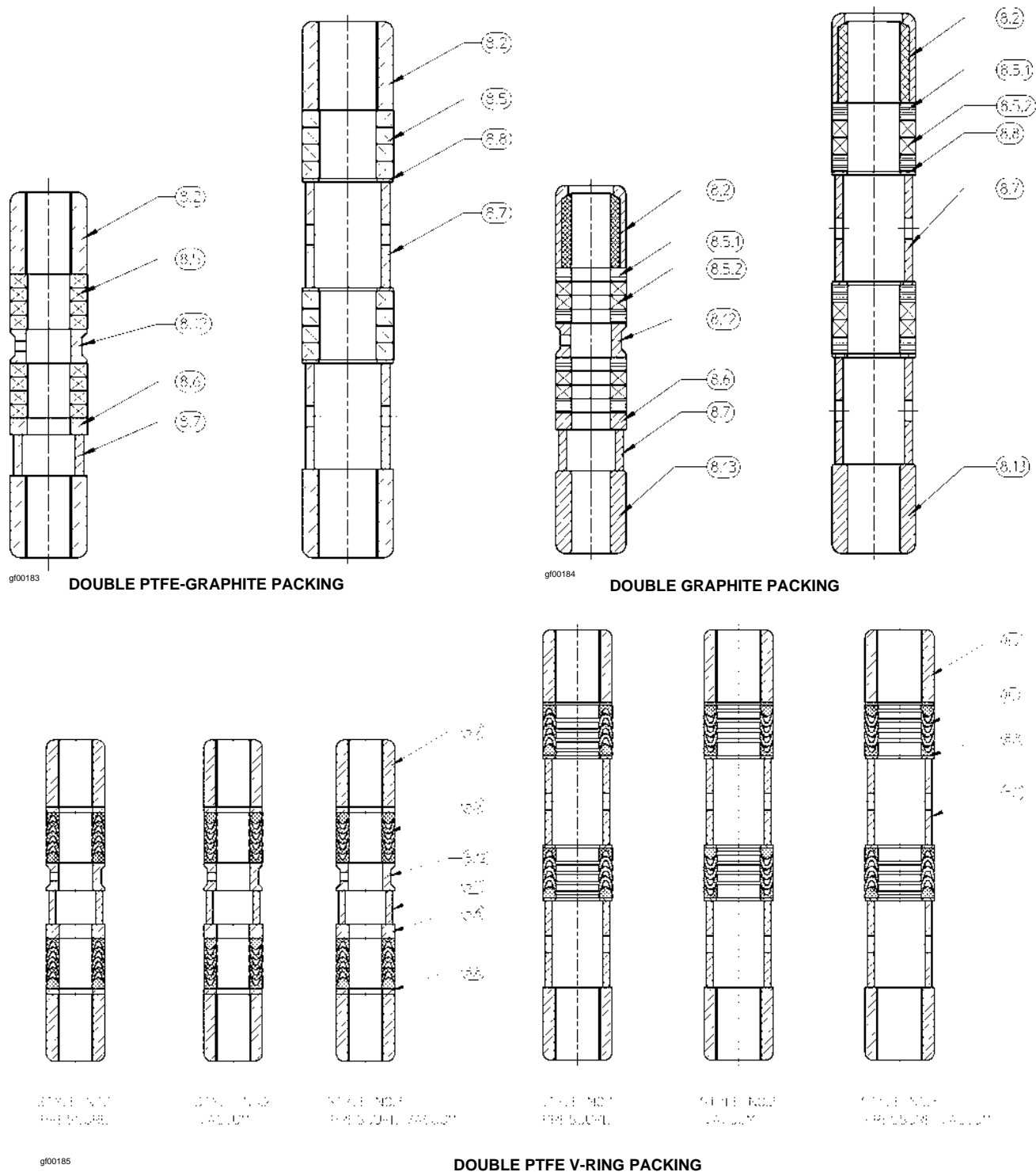
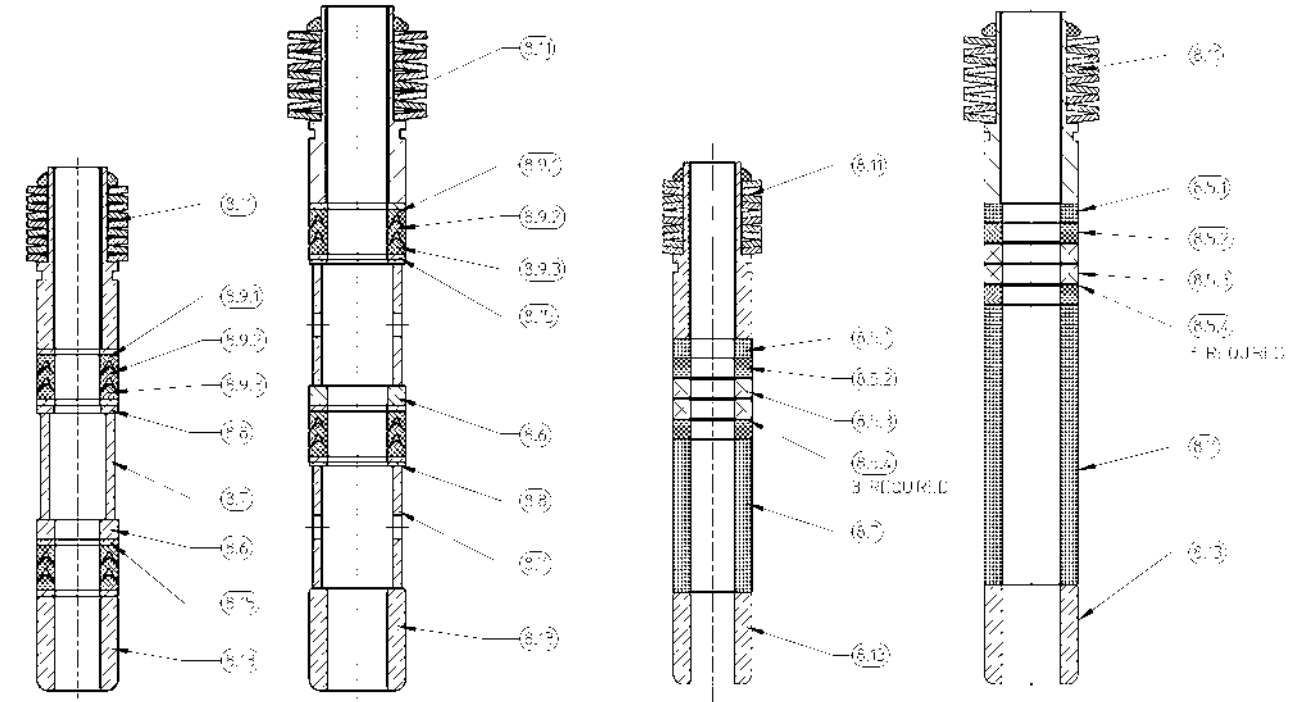


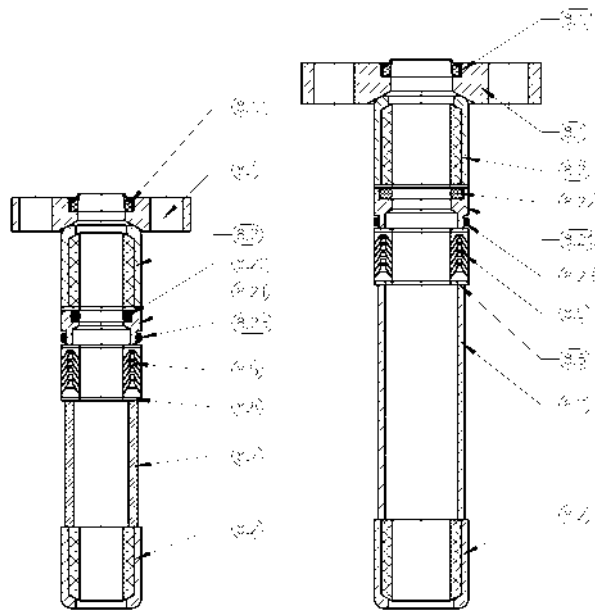
Figure 4. Typical Double Packing Arrangements





ENVIRO-SEAL PTFE PACKING

ENVIRO-SEAL GRAPHITE ULF PACKING



gf00192

PSA PACKING (VPC-61)

Figure 5. Typical ENVIRO-SEAL and PSA Packing Arrangements

# 1018S Valve

Table 5. Seat Ring Torque Guidelines

Valve Size		Seat Ring Torque	
DN	inch	N•m	Lbf•ft
15	1/2	150	111
25	1	150	111
40	1-1/2	150	111
50	2	200	148
80	3	300	222
100	4	300	222

Table 6. Seat Ring Removal Tool

Valve Size	A	B	C	D $\emptyset$
DN	mm			
15-25	150	7.0	16.0	50.0
40	160	7.0	20.0	70.0
50	160	7.0	20.0	70.0
80	205	7.0	24.5	104.5
100	217	12.0	24.5	124.5
Size	inch			
1/2-1	5.906	0.276	0.630	1.949
1-1/2	6.299	0.276	0.787	2.736
2	6.299	0.276	0.787	2.736
3	8.071	0.276	0.965	4.114
4	8.543	0.472	0.965	4.902

## Trim Maintenance

Key numbers in this section refer to figure 8.

### Disassembly

1. Remove the actuator and bonnet as described in steps 1 to 7 of the section Replacing the Packing.

### CAUTION

Use care to avoid damaging the gasket sealing surfaces.

The surface finish of the valve stem (key 6, 7 or 7.1) is critical for making a good packing seal. The seating surfaces of the seat ring (key 4) and the valve plug (key 6) are critical for tight shutoff and should therefore also be treated with care and properly protected.

2. Packing parts can be removed from the bonnet if desired. Replace these parts as described in the section on Packing Maintenance.
3. Use a seat ring tool made according to the dimensions in figure 6 to remove the seat ring (key 4) as follows:
  - a. Insert the tool into the valve body. Be certain the tool lugs are engaged in the corresponding recesses in the seat ring.
  - b. Use a torque gun or driver having torque capabilities equal to or greater than those shown in table 5. Connect the gun to a socket that snugly fits the hex head on the seat ring tool.
  - c. Insert the socket onto the hex head of the seat ring tool.

### CAUTION

Be careful to hold the torque gun and attached socket at right angles to the seat ring when applying torque. Tilting the gun and socket while applying torque may cause the lugs on the seat ring tool to suddenly disengage from the recesses in the seat ring thus causing possible damage to the seat ring.

4. Remove the seat ring (key 4) from the valve body.
5. Inspect parts for wear or damage that would prevent proper operation of the valve body.
6. Replace trim parts as necessary.

### Assembly

1. Before installing the new seat ring, thoroughly clean the threads in the valve body port. Apply suitable lubricant to the threads and to the 60° surface of the new seat ring (see key 4, figures 8 and 9). Screw the seat ring into the valve body. Using the seat ring tool, a lathe or boring mill, tighten the seat ring to the torque value in table 5. Remove all excess lubricant after tightening.
2. Remove any protective tape or covering from the valve plug and stem assembly and carefully install it into the valve body.
3. Clean the bonnet gasket seating surfaces and install a new bonnet gasket.

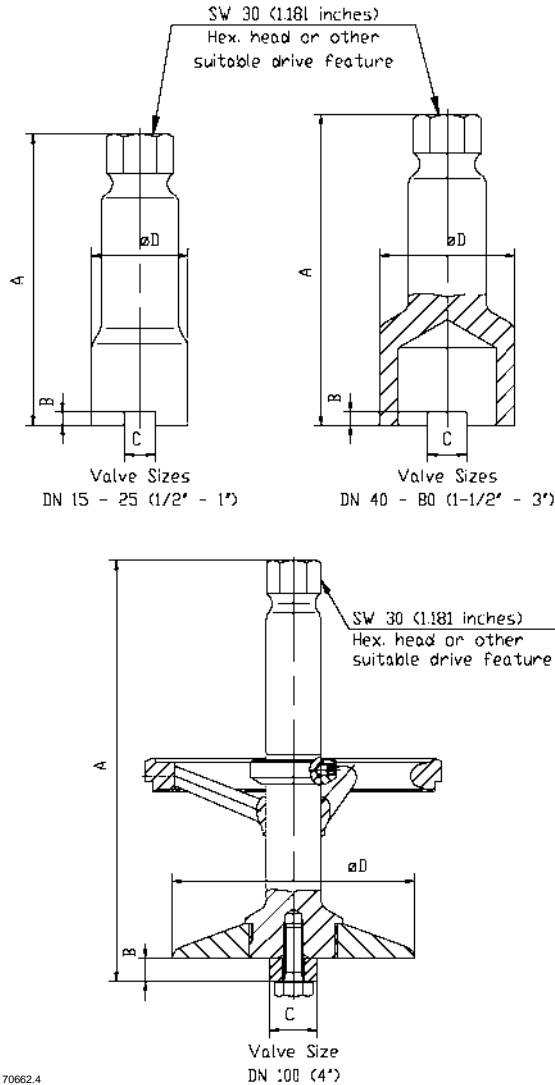


Figure 6. Removal and Installation Tool

**Note**

**If the packing is to be reused and was not removed from the bonnet, perform the following step carefully to avoid damaging the packing with the stem threads.**

4. Mount the bonnet on the valve body and complete assembly according to steps 9 to 13 of the section Replacing the Packing, omitting steps 12 and 13 if new packing is not being installed.

**Lapping Metal Seats**

**CAUTION**

**To avoid damaging the bellows assembly in a bellows bonnet construction, do not attempt to lap the metal seating surfaces on valves of this type. The design of the bonnet assembly prevents rotation of the stem and any forced lapping rotation will damage the bellows.**

With metal-seat constructions, seating surfaces of the valve plug and seat ring can be lapped for improved shutoff. Deep nicks and scratches should be machined out rather than ground out. Use a good quality lapping compound of a mixture of 280 to 600-grit. Apply the compound to the bottom of the valve plug.

Assemble the valve to the extent that the seat ring (key 4) and plug and stem assembly (key 6) are fitted and the bonnet (key 2), complete with guide bushing (key 8.2), is bolted to the valve body. A simple handle can be made from a piece of strap iron locked to the valve stem with nuts. After lapping, remove the bonnet and clean the seat surfaces. Completely assemble as described in the assembly portion of the Trim Maintenance procedure and test the valve for shutoff. Repeat the lapping procedure if leakage is still excessive.

**Noise Attenuation Trim**

Key numbers refer to figure 10.

The 1018S multi-hole noise trim provides aerodynamic noise control that is effective for vapor, gas and steam flow applications and can be used with the standard metal-to-metal seat, the soft seated Teflon insert and the hard faced seats.

**Disassembly**

1. Remove the actuator and bonnet as described in steps 1 to 4 of the section Replacing the Packing.
2. When lifting the bonnet and stem assembly off the valve body, the cage retaining ring, and possibly the multi-hole cage itself, will also lift with the rest of the assembly.

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- Loosen the packing flange cap screws (key 8.4) so that the packing is not tight on the valve stem. Remove any travel indicator parts and stem locknuts from the valve stem threads

## CAUTION

**Use care to avoid damaging the gasket sealing surfaces.**

**The surface finish of the valve stem (key 6, 7 or 7.1) is critical for making a good packing seal. The seating surfaces of the seat ring (key 4) and the valve plug (key 6) are critical for tight shutoff and should therefore also be treated with care and properly protected.**

- Set the bonnet and stem assembly on a protective surface to prevent damage to the bonnet gasket surface and plug seat. Separate the plug and stem assembly from the bonnet. Separate the cage retaining ring and the multi-hole cage.
- Remove the seat ring in the normal way as described above.

## Assembly

Follow the assembly instructions above in the Trim Maintenance section but with the following exceptions.

- Having screwed in the seat ring (key 4), slot the multi-hole cage (key 5.1) into the groove on the top of the seat ring. Ensure that the end with the vertical slots is uppermost.
- Place the plug and stem assembly (key 6) inside the cage on the seat ring and pass the cage retaining ring (key 5.2) with the tapered side down over the stem and place on the top of the cage.
- Carefully slide the bonnet (key 2) over the stem and locate its base in the center of the cage retaining ring (key 5.2) and, at the same time, over the bonnet studs (key 9.2).
- The process of tightening the bonnet nuts (key 9.3) will pull the cage retaining ring into the top of the multi-hole cage splaying out the top circumference of the cage to provide a firm interference fit (see figure 10).

## Bonnet Constructions

Three bonnet constructions are available. The standard plain bonnet (fig 8) incorporates a welded plug and stem assembly. Note, these parts are only available as an assembly. For extreme temperatures or difficult to handle fluids either an extension bonnet (fig 11) or a bellows bonnet (fig 12) may be fitted. These incorporate a bonnet extension (key 12.1) which fits between the bonnet and the valve body.

## Extension Bonnets

Refer to figure 11.

For the extension bonnet arrangement the plug and stem are supplied as separate parts. When replacing the plug and stem follow the instructions below.

## Disassembly

- Follow steps 1 - 7 shown in the section Replacing Packing.
- Carefully slide the plug and stem assembly out of the bonnet taking care not to damage the packing with the stem thread.

## Assembly

- Screw the new valve stem (key 7) firmly into the new plug (key 6). Refer to figure 7 for the correct torque.
- Using the dimensions given in figure 7 select the proper drill size and drill through the plug and stem using the pilot hole provided in the plug.
- Remove any chips or burrs and drive in a new pin (key 9.4). Ensure that the pin extends evenly either side of the plug. The extended pin prevents rotation of the plug and stem once the valve is assembled.

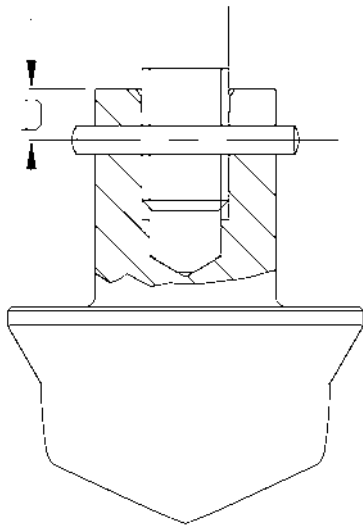
## CAUTION

**To avoid weakening the stem that may cause failure in service, never reuse an old stem with a new valve plug. Using an old stem with a new plug requires drilling a new pin hole in the stem which will weaken it. However a used valve plug may be used with a new stem.**

- Carefully insert the plug and stem assembly in to the bonnet taking care not to damage the valve packing.

Table 7. Valve Stem Connection Torque and Pin Replacement

Stem Diameter	Stem/Plug Torque		Drill Size	D
	mm	N•m		
12	21	15	4	7
16	50	37	6	8



GF00191

Figure 7. Plug Stem Connection and Pin Replacement

- Slide the plug and stem assembly to the full up position such that the extending ends of the plug/stem pin are located in the vertical groove in the bore of the guide bush.
- Remove the covering protecting the valve cavity and install a new bonnet gasket (key 9.1) making sure that the gasket seating surfaces are clean and smooth.
- Lift the whole assembly, taking care that the plug and stem assembly does not slide out, on to the valve body and over the bonnet studs (key 9.2).
- Lubricate the bonnet studs (key 9.2), nuts (key 9.3) and the surface between the nuts and bonnet with a suitable lubricant. Tighten the nuts (key 9.3) in a crisscross pattern until the metallic stop at the bottom side of the bonnet flange contacts the body surface. This will guarantee that the body to bonnet joint will withstand test pressures and application service conditions (see table 4 for details).

## Bellows Bonnet

Refer to figure 12.

### Disassembly

- Follow steps 1 - 2 shown in the section Replacing the Packing.

### WARNING

To avoid personal injury or property damage by uncontrolled movement of the bonnet, loosen the bonnet bolting by following the instructions in the next step. Do not remove a stuck bonnet by pulling on it with equipment that can stretch or store energy in any other manner. The sudden release of stored energy can cause uncontrolled movement of the bonnet.

#### Note

The following step also provides additional assurance that the valve body fluid pressure has been relieved.

- Cap screws (key 9.7) and hex nuts (key 9.8) attach the valve bonnet (key 2) to the bonnet extension (key 12.1). Loosen these nuts approximately 3mm (1/8 inch). Then loosen the bonnet-to-extension joint by either rocking the bonnet or prying between the bonnet and bonnet extension. Work the prying tool around the bonnet until the bonnet loosens. If no fluid leaks from the joint, remove the nuts and cap screws completely and carefully lift the bonnet off the valve stem.
- Hex nuts (key 9.3) attach the bonnet extension (key 12.1) to the valve body (key 1). Remove these nuts and loosen the extension-to-body gasketed joint by either rocking the bonnet or prying the extension of the body.
- Lift the extension (key 12.1), complete with the bellows, stem and plug assembly, clear of the body and place on a protective surface.
- Extend the plug (key 6) and stem (key 7.1) from the base of the bonnet extension to expose the plug/stem pin (key 9.4). Drive out the plug/stem pin and unscrew the plug from the stem.
- Slide the stem and bellows assembly (key 7.3) through the top of the bonnet extension (key 12.1) removing the two bonnet gaskets.
- Inspect all parts for signs of wear and damage and replace as necessary.

# 1018S Valve

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## Assembly

1. Inspect all gasket seating surfaces on the bonnet (key 2), bonnet extension (key 12.1) and valve body (key 1) to ensure they are clean and smooth.
2. Taking the stem and bellows assembly screw on the plug (key 6) to give a firm fit. Take care not to rotate the bellows or otherwise damage the bellows in the process.
3. Using the pilot hole in the plug, drill through the plug and stem using the appropriate drill shown in figure 7. Then unscrew the plug from the stem.
4. Place a bellows gasket (key 9.6) on the top of bonnet extension (key 12.1) and slide the stem and bellows assembly from the top through the bonnet extension.
5. Place the second bellows gasket (key 9.6) on the top surface of the bellows assembly and then carefully place the bonnet over the stem taking care not to damage the packing if fitted.
6. Bolt the bonnet to the bonnet extension using the cap screws (key 9.7) and hex nuts (key 9.8) but only partially tighten the nuts. Refer to table 4.
7. Re-screw the plug (key 6) on to the base of the stem (key 7.1) until the holes in the plug and stem, made in step 3 above, align. Extend the stem as far as possible from the base of the bellows and drive in a new pin (key 9.4) ensuring that the pin extends equally either side of the plug.
8. Slacken the cap screws (key 9.7) and hex nuts (key 9.8) of the bonnet and then rotate the complete stem, plug and bellows assembly until the ends of the pin extending from the plug align with the vertical grooves in the bore of the guide bush (key 12.2). This construction prevents the plug and stem assembly rotating when the valve is in service.
9. Retighten the cap screws (key 9.7) and hex nuts (key 9.8) to the correct torque shown in table 4.

10. Place a new bonnet extension-to-body gasket (key 9.1) on the gasket surface of the valve body (key 1) and carefully lift the complete bonnet assembly on to the bonnet studs in the body.

11. Tighten the hex nuts (key 9.3) as shown in table 3.

## Parts Ordering

Each valve is assigned a serial number which can be found on the valve or on the nameplate (key 18, not shown). The nameplate will normally be fitted to the actuator but if the valve is supplied without an actuator the nameplate will be wired to the valve. Refer to this serial number when contacting your Fisher sales office for technical assistance. When ordering replacement parts refer to this serial number and give the part description and part number from the following parts list.

Use only genuine Fisher replacement parts. Components that are not supplied by Fisher should not, under any circumstances, be used in any Fisher valve, because they will void your warranty, might adversely affect the performance of the valve, and might jeopardize worker and workplace safety.

### Note

**Fisher does not assume responsibility for the selection, use, or maintenance of any product. Responsibility for proper selection, use, and maintenance of any Fisher product remains solely with the purchaser and end-user.**

Parts Kits

Stem Diameter mm	12	16
Yoke Boss Diameter, mm (Inch)	54 (2-1/8)	71 (2-13/16)
<b>Repair Kits</b>		
Single PTFE/Graphite (contains keys - - -)	R1018SY0072 (8.2, 8.5, 8.7, 8.12)	R1018SY0082 (8.2, 8.5, 8.6, 8.7, 8.17)
Single Graphite (contains keys - - -)	R1018SY0092 (8.2, 8.5.1, 8.5.2, 8.6, 8.12, 8.13)	R1018SY0102 (8.2, 8.5.1, 8.5.2, 8.6, 8.7, 8.13, 8.17)
Single PTFE V-Ring (contains keys - - -)	R1018SY0112 (8.2, 8.8, 8.9, 8.10, 8.12)	R1018SY0122 (8.2, 8.8, 8.9, 8.10, 8.17)
ENVIRO-SEAL Double PTFE (contains keys - - -)	RPACKY00012	RPACKY00022
ENVIRO-SEAL Single Graphite (contains keys - - -)	RPACKY00032	RPACKY00042
<b>Retrofit Kits</b>		
ENVIRO-SEAL Double PTFE (contains keys - - -)	RPACKYRT052 (8.1, 8.3, 8.6, 8.7, 8.8, 8.9, 8.11, 8.13, 8.15)	RPACKYRT062 (8.1, 8.3, 8.6, 8.7, 8.8, 8.9, 8.11, 8.13, 8.15)
ENVIRO-SEAL Single Graphite (contains keys - - -)	RPACKYRT072 (8.1, 8.3, 8.5.1, 8.5.2, 8.5.3, 8.5.4, 8.6, 8.7, 8.8, 8.11, 8.13)	RPACKYRT082 (8.1, 8.3, 8.5.1, 8.5.2, 8.5.3, 8.5.4, 8.6, 8.7, 8.11, 8.13)

Parts List

Key	Description	Part Number	Key	Description	Part Number
			8.3	Packing Flange Capscrew	
			8.5*	Packing Ring	See table
			8.6*	Base Ring	See table
			8.7*	Spacer	See table
			8.8*	Washer	See table
			8.9*	V-Ring Packing Set	See table
			8.10*	Packing Spring	See table
			8.11*	Spring Pack Assembly	See table
			8.12*	Lantern Ring or Spacer	See table
			8.13*	Bushing	See table
			8.17*	Spacer	See table
			8.20	Plug or Lubricator and Isolating Valve	
			8.21*	Support Ring	See table
			8.22*	O-ring	See table
			8.23*	O-ring	See table
			9.1*	Bonnet Gasket (Graphite Laminate/SST)	See table
			9.2	Bonnet Stud	
			9.3	Bonnet Nut	
			9.4*	Stem/plug Pin (Extension and Bellows Bonnets Only)	
				DN15 - 50 (1/2 to 2-Inch)	1992163
				DN80 - 100 (3 to 4-Inch)	2526905
			9.5*	Bonnet Extension Gasket	See table
			9.6	Bellows Gasket	See table
			9.7	Bonnet Extension Cap Screw	
			9.8	Bonnet Extension	
			11	Yoke Locknut	
			12.1	Bonnet Extension	
			12.2*	Bushing	
				15 - 50 mm (1/2 to 2-Inch)	2217198
				80 - 100 mm (3 to 4-Inch)	2218534
			30	Packing Warning Tag (not shown)	
			- - -	Seat Ring Removal / Installation Tool	
				DN 15 - 25 (1/2 to 1-Inch)	0471267
				DN 40 - 50 (1-1/2 to 2-Inch)	0471275
				DN 80 (3-Inch)	0471291
				DN 100 (4-Inch)	1097458
1	Valve Body				
	If you need a valve body as a replacement part, order by valve size, serial number, and desired material.				
2	Bonnet				
	If you need a bonnet as a replacement part, order by valve size and stem diameter, serial number, and desired material.				
4*	Seat Ring	See table			
5.1*	Multi-hole noise attenuation cage				
5.2	Noise attenuation cage retaining ring				
6*	Plug and Stem Assembly	See table			
6*	Plug (Extension and Bellows Bonnet Only)	See table			
7*	Stem (Extension Bonnets Only)				
	DN15 - 50 (1/2 to 2-Inch)	2474042			
	DN80 - 100 (3 to 4-Inch)	2222477			
7.3*	Bellows Assembly (Includes Stem)				
	DN15 - 50 (1/2 to 2-Inch)	2217171			
	DN80 - 100 (3 to 4-Inch)	2227272			
8.1	Packing Flange				
8.2*	Bushing	See table			

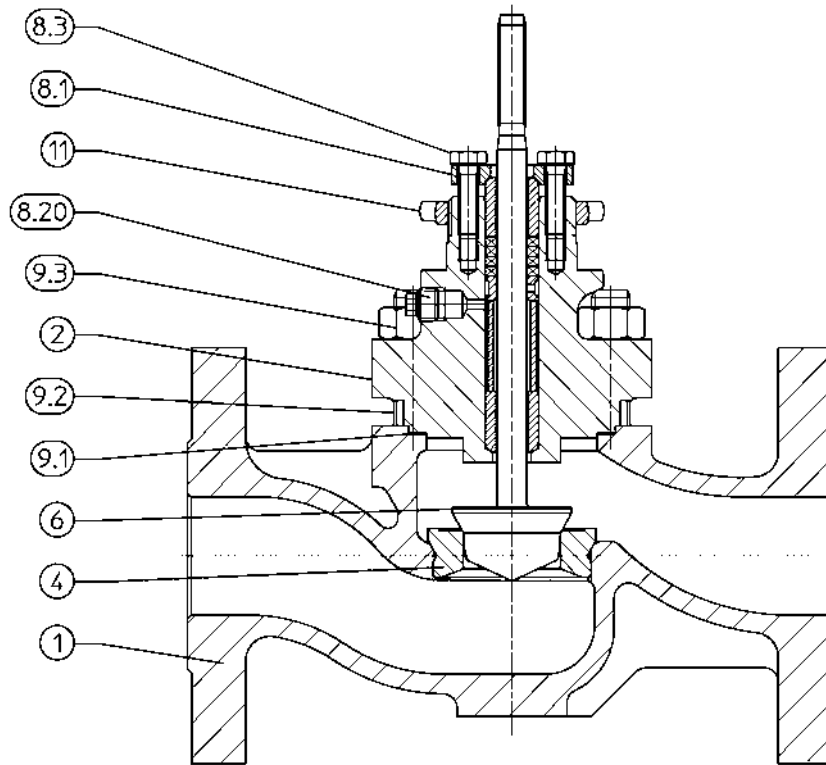
Note

(Note, except where indicated, sizes shown are valve sizes)

Note

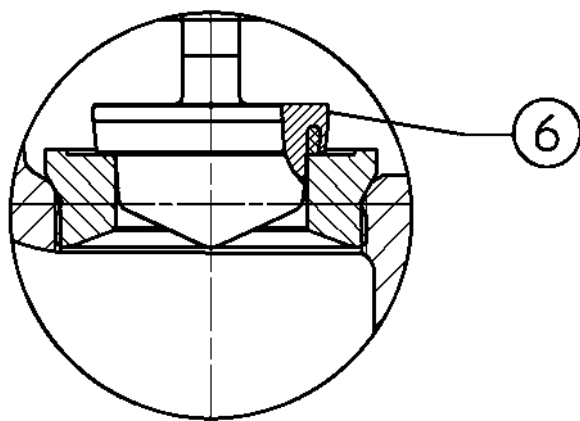
Part numbers are shown for recommended spares only. For part numbers not shown, contact your Fisher sales office.

\*Recommended spare parts



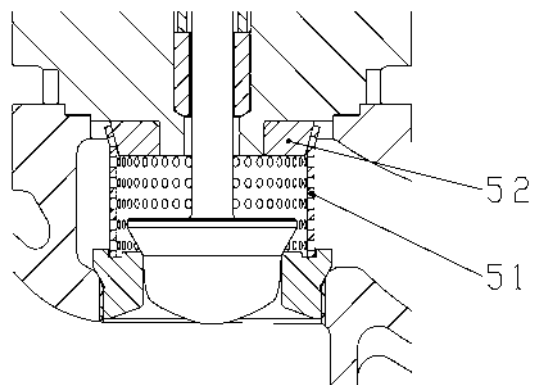
GF00190

Figure 8. Design 1018S Valve with Plain Bonnet



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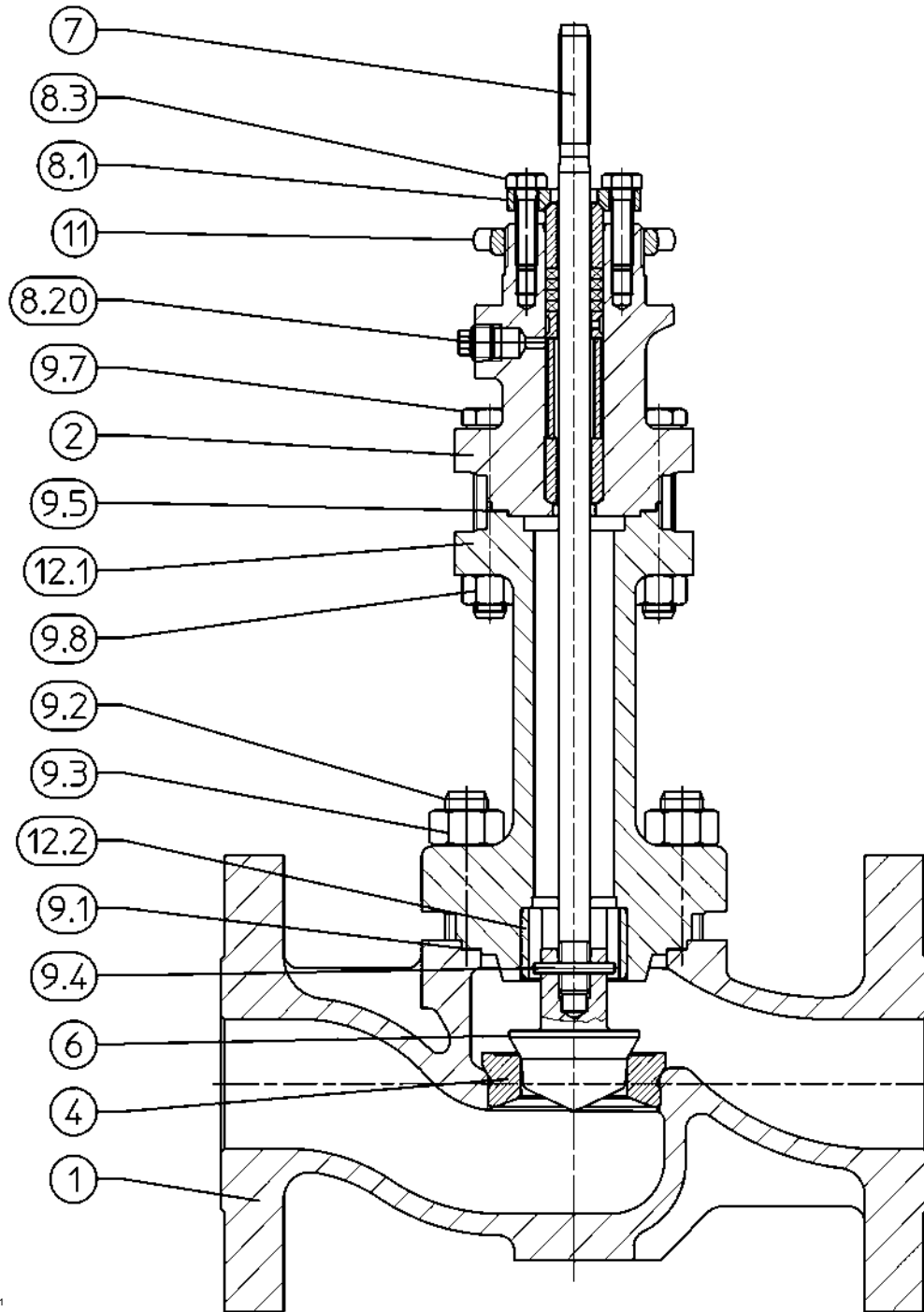
Figure 9. Valve Plug with Soft Seat Insert



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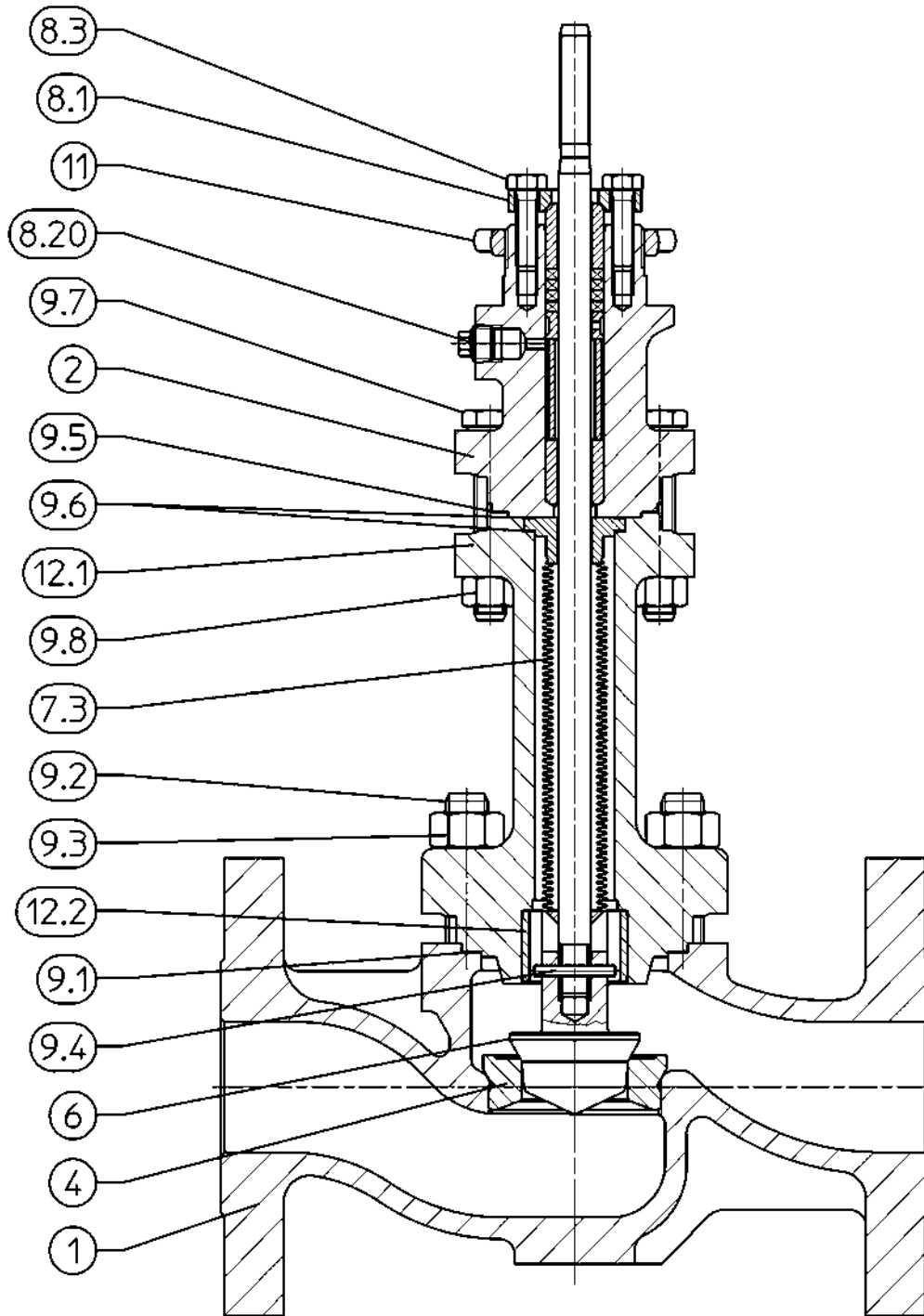
Figure 10. Multi-Hole Cage Noise Trim Attenuator





GF00191

Figure 11. Extension Bonnet



GF00193

Figure 12. Bellows Bonnet

# Instruction Manual

Form 5420  
March 2003

# 1018S Valve

Key 4\* Seat Rings for Stainless Steel (metal and soft seat) and Alloy 6 Trim

VALVE SIZE		SEAT PORT DIAMETER		STAINLESS STEEL TRIM	ALLOY 6 TRIM
				Seat Ring Material	
DN	inches	mm	inches	SST	SST hard faced w/CoCr-A
15	1/2	6	0.236	0483478	0483516
		10	0.394	0483486	0483524
		15	0.591	0483494	0483532
25	1	6	0.236	0483575	0483630
		10	0.394	0483583	0483648
		15	0.591	0483591	0483656
		20	0.787	0483605	0483664
		25	0.984	1856251	1936484
40	1-1/2	20	0.787	0483729	0483788
		25	0.984	1936387	1975218
		30	1.181	0483737	0483796
		40	1.575	0483745	0483800
50	2	20	0.787	0483729	0483788
		25	0.984	1936387	1975218
		30	1.181	0483737	0483796
		40	1.575	0483745	0483800
		50	1.969	0483753	0483818
80	3	40	1.575	0483982	0484032
		50	1.969	0483990	0484040
		65	2.559	0484008	0484059
		80	3.150	0484016	0483265
100	4	80	3.150	0483346	0483400
		95	3.740	0483354	0483419

Key 4 and 5 Noise Attenuation Trim for Plain Bonnet Only

VALVE SIZE		PORT DIAMETER		CAGE (KEY 5.1)	RETAINING RING (KEY 5.2)	SEAT RING (KEY 4)	
DN	Inch	mm	Inch	SST	SST	SST	SST hard faced w/CoCr-A
25	1	20	0.787	1029681	1029703	1029665	1181556
40	1-1/2	40	1.575	1073435	1Q57227E012	1073591	1073605
50	2	40	1.575	1073435	1Q57227E012	1073591	1073605
80	3	80	3.150	0566470	1Q57014E012	2527898	1222589
100	4	95	3.740	0591238	1Q57226E012	2527871	1262777

# 1018S Valve

Key 6\* Valve Plug and Stem Assembly for Plain Bonnet (Equal Percentage)<sup>(1)</sup>

VALVE SIZE		STEM DIAMETER	SEAT PORT DIAMETER		MAXIMUM COEFFICIENT		VALVE PLUG MATERIAL <sup>(2)</sup>		
DN	Inch	mm	mm	Inch	K <sub>v</sub>	C <sub>v</sub>	SST	SST hard faced w/CoCr-A <sup>(3)</sup>	SST with Teflon insert <sup>(4)</sup>
15	1/2	12	6	0.236	1.1	1.3	2424347	2424355 <sup>(5)</sup>	2424363
			10	0.394	2.3	2.7	2424428	2424436 <sup>(5)</sup>	2424444
			15	0.591	3.5	4.0	2424495	2424509 <sup>(5)</sup>	2424517
25	1	12	6	0.236	0.2	0.3	2469235	2469243 <sup>(5)</sup>	2469251
			6	0.236	0.4	0.5	2469278	2469286 <sup>(5)</sup>	2469294
			6	0.236	0.6	0.7	2471566	2469308 <sup>(5)</sup>	2471612
			6	0.236	0.9	1.0	2424266	2424274 <sup>(5)</sup>	2424282
			6	0.236	1.3	1.5	2424347	2424355 <sup>(5)</sup>	2424363
			10	0.394	2.7	3.1	2424428	2424436 <sup>(5)</sup>	2424444
			15	0.591	4.0	4.6	2424495	2424509	2424517
			20	0.787	6.5	7.5	2465825	2424576	2424584
			25	0.984	10.0	11.6	2424622	2424649	2424657
			40	1-1/2	12	20	0.878	6.5	7.5
25	0.984	11.0				12.7	2424622	2424649	2424657
30	1.181	17.0				19.6	2470101	2469944	2470497
40	1.575	25.0				28.9	2464144	2464152	2464179
50	2	12	20	0.787	6.5	7.5	2465825	2424576	2424584
			25	0.984	12.0	13.9	2424622	2424649	2424657
			30	1.181	18.0	20.8	2470101	2469944	2470497
			40	1.575	25.0	28.9	2464144	2464152	2464179
			50	1.969	34.0	39.3	2464438	2464446	2464454
80	3	16	40	1.575	34.0	39.3	2470179	2470403	2471426
			50	1.969	46.0	53.1	2470187	2470411	2471434
			65	2.559	70.0	80.9	2469634	2469642	2469677
			80	3.150	90.0	104.0	2464586	2464594	2464608
100	4	16	80	3.150	90.0	104.0	2464586	2464594	2462608
			95	3.740	140.0	161.7	2464713	2464721	2464748

1. The plug, stem and insert, if fitted, are always supplied as an assembly and are not available as separate parts with a plain bonnet.
2. Stem material in all cases is SST.
3. Seating surface zone is Alloy 6.
4. PTFE plus 25 percent glass.
5. Plug tip is solid Alloy 6.

Key 6\* Valve Plug and Stem Assembly for Plain Bonnet (Linear)<sup>(1)</sup>

VALVE SIZE		STEM DIAMETER	SEAT PORT DIAMETER		MAXIMUM COEFFICIENT		VALVE PLUG MATERIAL <sup>(2)</sup>		
DN	Inch	mm	mm	Inch	K <sub>v</sub>	C <sub>v</sub>	SST	SST hard faced w/CoCr-A <sup>(3)</sup>	SST with Teflon insert <sup>(4)</sup>
15	1/2	12	15	0.591	3.7	4.3	2470217	2469456 <sup>(5)</sup>	2470543
25	1	12	6	0.236	1.3	1.5	2470195	2469421 <sup>(5)</sup>	2470527
			10	0.394	3.0	3.5	2470209	2469448 <sup>(5)</sup>	2470535
			15	0.591	5.0	5.8	2470217	2469456 <sup>(5)</sup>	2470543
			20	0.787	7.5	8.7	2470225	2469979	2470551
			25	0.984	11.0	12.7	2424703	2424711	2424738
40	1-1/2	12	40	1.575	33.0	38.1	2464217	2464225	2464233
50	2	12	40	1.575	36.0	41.6	2464217	2464225	2464233
			50	1.969	45.0	52.0	2464519	2464527	2464535
80	3	16	80	3.150	110.0	127.0	2464659	2464667	2464675
100	4	16	100	3.740	160.0	184.8	2464799	2464802	2464829

1. The plug, stem and insert, if fitted, are always supplied as an assembly and are not available as separate parts with a plain bonnet.
2. Stem material in all cases is SST.
3. Seating surface zone is Alloy 6.
4. PTFE plus 25 percent glass.
5. Plug tip is solid Alloy 6.

# Instruction Manual

Form 5420  
March 2003

# 1018S Valve

Key 6\* Valve Plug for Extension and Bellows Bonnets (Equal Percentage)

VALVE SIZE		SEAT PORT DIAMETER		MAXIMUM COEFFICIENT		VALVE PLUG MATERIAL		
DN	Inch	mm	Inch	K <sub>v</sub>	C <sub>v</sub>	SST	SST hard faced w/CoCr-A (1)	SST with Teflon insert (2)
15	1/2	6	0.236	1.1	1.3	2424371	2424398 <sup>(3)</sup>	2424401
		10	0.394	2.3	2.7	2424452	2424479 <sup>(3)</sup>	2424487
		15	0.591	3.5	4.0	2424169	2424177 <sup>(3)</sup>	2424185
25	1	6	0.236	0.25	0.3	2221756	2465035 <sup>(3)</sup>	2465124
		6	0.236	0.4	0.5	2466414	2466422 <sup>(3)</sup>	2466457
		6	0.236	0.6	0.7	2465221	2465213 <sup>(3)</sup>	2465256
		6	0.236	0.9	1.0	2424304	2424312 <sup>(3)</sup>	2424339
		6	0.236	1.3	1.5	2424371	2424398 <sup>(3)</sup>	2424401
		10	0.394	2.7	3.1	2424452	2424479 <sup>(3)</sup>	2424487
		15	0.591	4.0	4.6	2424169	2424177	2424185
		20	0.787	6.5	7.5	2465876	2424606	2424614
		25	0.984	10.0	11.6	2424665	2424673	2424681
40	1-1/2	20	0.878	6.5	7.5	2465876	2424606	2424614
		25	0.984	11.0	12.7	2424665	2424673	2424681
		30	1.181	17.0	19.6	2466465	2466473	2466503
		40	1.575	25.0	28.9	2316064	2464195	2464209
50	2	20	0.787	6.5	7.5	2465876	2424606	2424614
		25	0.984	12.0	13.9	2424665	2424673	2424681
		30	1.181	18.0	20.8	2466465	2466473	2466503
		40	1.575	25.0	28.9	2316064	2464195	2464209
		50	1.969	34.0	39.3	2464462	2464489	2464497
80	3	40	1.575	34.0	39.3	2466341	2466368	2466449
		50	1.969	46.0	53.1	2466481	2464969	2465019
		65	2.559	70.0	80.9	2465264	2465272	2465329
		80	3.150	90.0	104.0	2464616	2464624	2464632
100	4	80	3.150	90.0	104.0	2464616	2464624	2464632
		95	3.740	140.0	161.7	2464756	2464764	2464772

1. Seating surface zone is Alloy 6.  
2. PTFE plus 25 percent glass.  
3. Plug tip is solid Alloy 6.

Key 6\* Valve Plug for Extension and Bellows Bonnets (Linear)

VALVE SIZE		SEAT PORT DIAMETER		MAXIMUM COEFFICIENT		VALVE PLUG MATERIAL		
DN	Inch	mm	Inch	K <sub>v</sub>	C <sub>v</sub>	SST	SST hard faced w/CoCr-A (1)	SST with Teflon insert (2)
15	1/2	15	0.591	3.7	4.3	2424223	2424231 <sup>(3)</sup>	2424258
25	1	6	0.236	1.3	1.5	2465841	2465906 <sup>(3)</sup>	2466007
		10	0.394	3.0	3.5	2466031	2466317 <sup>(3)</sup>	2466325
		15	0.591	5.0	5.8	2424223	2424231 <sup>(3)</sup>	2424258
		20	0.787	7.5	8.7	2466023	2466058	2466066
		25	0.984	11.0	12.7	2424746	2424754	2424762
40	1-1/2	40	1.575	33.0	38.1	2464241	2464268	2464276
50	2	40	1.575	36.0	41.6	2464241	2464268	2464276
		50	1.969	45.0	52.0	2316056	2464551	2464578
80	3	80	3.150	110.0	127.0	2464683	2464691	2464705
100	4	100	3.740	160.0	184.8	2464837	2464853	2464861

1. Seating surface zone is Alloy 6.  
2. PTFE plus 25 percent glass.  
3. Plug tip is solid Alloy 6.

# 1018S Valve

Key 8\* Packing Box Parts for 12mm Diameter Stem (DN15 to 50 or 1/2 to 2-Inch Valve)

Packing Type	Description of Part	Key	Part Number
PTFE/graphite, single	Bushing (2 required)	8.2	19A3273X012
	Packing ring, PTFE/graphite composition (4 required)	8.5	1278231
	Spacer	8.7	0869236
	Spacer	8.12	19A3275X012
PTFE/graphite, double	Bushing (2 required)	8.2	19A3273X012
	Packing ring, PTFE/graphite composition (8 required)	8.5	1278231
	Base ring	8.6	0225924
	Spacer	8.7	2472678
	Lantern ring	8.12	19A3275X012
PTFE V-ring, single	Bushing (2 required)	8.2	19A3273X012
	Washer (2 required)	8.8	19A4913X012
	Packing ring set, PTFE	8.9	19A4908X012
	Spring	8.10	2061333
	Spacer (2 required)	8.12	19A3275X012
PTFE V-ring, double	Bushing (2 required)	8.2	19A3273X012
	Base ring	8.6	0225924
	Spacer	8.7	2472678
	Washer (2 required)	8.8	19A4913X012
	Packing ring set, PTFE (2 required)	8.9	19A4908X012
	Lantern ring	8.12	19A3275X012
Graphite, single	Bushing	8.2	2472562
	Packing ring (2 required)	8.5.1	1898272
	Packing ring (2 required)	8.5.2	1898299
	Spacer	8.7	0869236
	Spacer	8.12	19A3275X012
	Bushing	8.13	2472244
Graphite, double	Bushing	8.2	2472562
	Packing ring (4 required)	8.5.1	1898272
	Packing ring (4 required)	8.5.2	1898299
	Base ring	8.6	0225924
	Spacer	8.7	2472678
	Lantern ring	8.12	19A3275X012
ENVIRO-SEAL, PTFE V-rings, double	Bushing	8.13	2472244
	Base ring	8.6	0225924
	Spacer	8.7	2535432
	Washer	8.8	19A4913X012
	Packing ring set (2 required)	8.9	12B8283X012
	Spring pack assembly	8.11	13B6564X012
ENVIRO-SEAL, Graphite ULF, single	Bushing	8.13	2472244
	Anti-extrusion washer (4 required)	8.15	12B8281X012
	Bushing	8.5.1	13B6089X012
	Packing ring (2 required)	8.5.2	13B6074X012
	Packing ring (2 required)	8.5.3	19B4146X012
	Washer (3 required)	8.5.4	13B6076X012
PTFE/Carbon PSA, single	Spacer	8.7	19B4147X012
	Spring pack assembly	8.11	13B6078X012
	Bushing	8.13	2472244
	Bushing (2 required)	8.2	1Q57143F012
	Packing ring set	8.5	2073676
	Spacer	8.7	0869236
PTFE/Carbon PSA, single	Washer (3 required)	8.8	0280607
	Wiper ring	8.11	0819573
	Support ring	8.21	1Q57147F012
	O-ring	8.22	0802808
	O-ring	8.23	0802786

# Instruction Manual

Form 5420  
March 2003

# 1018S Valve

## Key 8\* Packing Box Parts for 16mm Diameter Stem (DN80 to 100 or 3- and 4-Inch Valve)

Packing Type	Description of Part	Key	Part Number
PTFE/graphite, single	Bushing (2 required)	8.2	2473852
	Packing ring, PTFE/graphite composition (4 required)	8.5	1278258
	Base ring	8.6	0225932
	Spacer	8.7	2473933
	Spacer	8.17	1Q57018E012
PTFE/graphite, double	Bushing (2 required)	8.2	2473852
	Packing ring, PTFE/graphite composition (8 required)	8.5	1278258
	Spacer (2 required)	8.7	2473933
	Washer (3 required)	8.8	0319686
PTFE V-ring, single	Bushing (2 required)	8.2	2473852
	Washer (3 required)	8.8	031986
	Packing ring set, PTFE	8.9	2473984
	Spring	8.10	2061341
	Spacer (1 required)	8.17	1Q57018E012
PTFE V-ring, double	Bushing (2 required)	8.2	2473852
	Spacer (2 required)	8.7	2473933
	Washer (4 required)	8.8	0319686
	Packing ring set, PTFE (2 required)	8.9	2473984
Graphite, single	Bushing	8.2	2473887
	Packing ring (2 required)	8.5.1	1867105
	Packing ring (2 required)	8.5.2	1898221
	Base ring	8.6	0225932
	Spacer	8.7	2473933
	Bushing	8.13	2473879
	Spacer	8.17	1Q57018E012
Graphite, double	Bushing	8.2	2473887
	Packing ring (4 required)	8.5.1	1867105
	Packing ring (4 required)	8.5.2	1898221
	Spacer (2 required)	8.7	2473933
	Washer (3 required)	8.8	0319686
	Bushing	8.13	2473879
ENVIRO-SEAL PTFE V-ring, double	Base ring	8.6	0225932
	Spacer (2 required)	8.7	2473933
	Washer (2 required)	8.8	0319686
	Packing set (2 required)	8.9	2218585
	Spring pack assembly	8.11	13B6564E012
	Bushing	8.13	2473879
	Anti-extrusion washer (4 required)	8.15	2218593
ENVIRO-SEAL Graphite ULF, single	Bushing	8.5.1	2218666
	Packing ring (2 required)	8.5.2	2218631
	Packing ring (2 required)	8.5.3	19B4152X012
	Washer (3 required)	8.5.4	2218658
	Spacer	8.7	19B4151X012
	Spring pack assembly	8.11	13B6078E012
	Bushing	8.13	2473879
PTFE/Carbon PSA, single	Bushing (2 required)	8.2	1Q57156F012
	Packing ring set	8.5	2073684
	Spacer	8.7	1Q57488F012
	Washer (3 required)	8.8	0319686
	Wiper ring	8.11	0819581
	Support ring	8.21	1Q57159F012
	O-ring	8.22	0802794
	O-ring	8.23	0802778

# 1018S Valve

Key 9\* Bonnet Gasket - Graphite Laminate/SST

VALVE SIZE		PART	KEY	PLAIN BONNET	EXTENSION BONNET	BELLOWS BONNET
DN	Inch					
15 - 25	1/2 - 1	Bonnet gasket	9.1	1882945	1882945	1882945
		Bonnet gasket	9.5	---	1882945	---
		Bellows gasket (2 req'd)	9.6	---	---	2148218
40 - 50	1-1/2 - 2	Bonnet gasket	9.1	1882953	1882945	1882953
		Bonnet gasket	9.5	---	1882953	---
		Bellows gasket (2 req'd)	9.6	---	---	2148218
80	3	Bonnet gasket	9.1	1882988	1882961	1882988
		Bonnet gasket	9.5	---	1882988	---
		Bellows gasket (2 req'd)	9.6	---	---	2148218
100	4	Bonnet gasket	9.1	1882996	1882961	1882996
		Bonnet gasket	9.5	---	1882996	---
		Bellows gasket (2 req'd)	9.6	---	---	2148218

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