

Smart Solutions. Powerful Products.



Drill Pipe Float Valves

EXPERIENCE, DEDICATION and VISION

Introducing Forum Energy Technologies – a global provider of manufactured technologies and applied products and services. We may be a new name to you but our equipment and employees have a long history of solving our customers' challenges. FET brings together some of the most well-known brands in our industry with an extensive range of mission critical products and services. We are building a world class company to bring innovative solutions to our worldwide customers. With offices in the key oilfield distribution centers of the globe, Forum is well-positioned to supply our clients with the equipment and related services that improve safety and performance and lower operating costs.

Forum's products and services range from the underwater reservoir to the refinery, from the sea floor to the above ground transportation line. We pride ourselves on giving you a comprehensive offering of solutions to maximize your operations and improve your bottom line. Our customers are our partners and we work with them to solve their ever-changing challenges.



Introduction

FORUM is the original manufacturer of Baker Drill Pipe Float Valves. Committed to continuous improvement and production of quality products for optimum performance and reliability, Forum Drill Pipe Float Valves have become an industry standard with their superior engineering, quality, construction and dependability in service.

FORUM manufactures a complete line of Float Valves, Repair Kits, and Puller Assemblies to accommodate a wide range of drilling situations and operating conditions, including H2S and Steam Service. These Drill Pipe Float Valves provide added blowout protection at the bottom of the drillstring, prevent flowback when joints are added, and keep cuttings out of the drillpipe to prevent bit plugging while making connections.

Note: It is recommended that if multiple Drill Pipe Float Valves are run in the same string, they be separated. However the Model GS may be stacked.

QUALITY CONSTRUCTION

FORUM Drill Pipe Float Valves have been designed, manufactured, tested, and validated in accordance with accepted engineering, manufacturing, and quality assurance standards.

RATED OPERATING PRESSURE

Model F Drill Pipe Float Valves rated 7,500 WP.

Model G & GS Drill Pipe Float Valves rated 7,500 WP.

CAGES & GS

Cage construction of the various Models F and G includes ductile iron, and there is an option for low alloy steel cage in some Model F sizes. Hardness levels of these are at or below 22 Rockwell C to resist hydrogen sulfide stress cracking when used for H2S applications. The Model GS cage is made from low alloy steel. Stainless Steel available upon request.



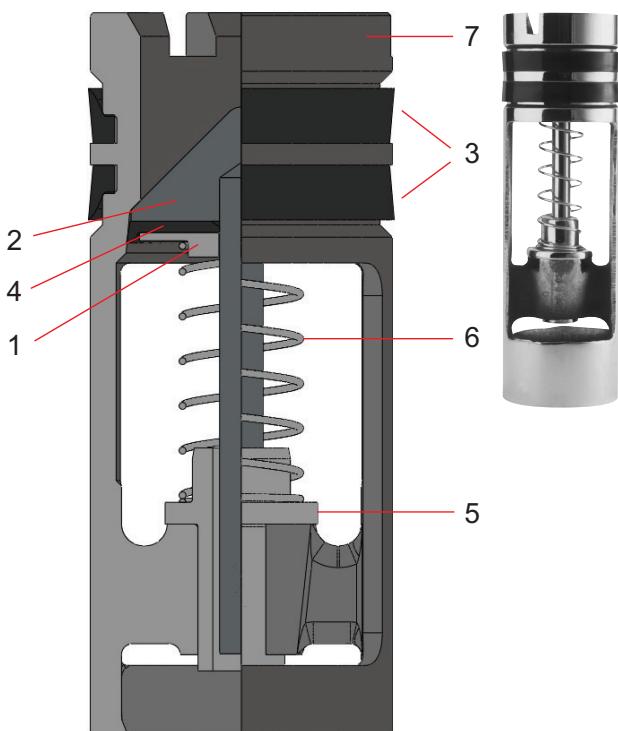
SPRINGS

Models F and G utilize high alloy springs for all applications.

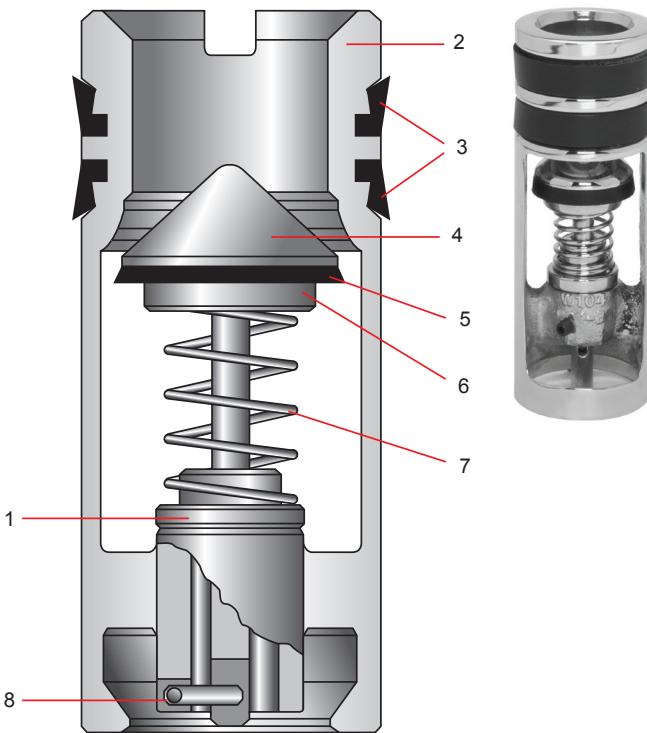
SEAL AND SHOCK ABSORBER ELASTOMER

Application	Material	Temperature
Standard	Nitrile (BUNA)	100°C [212°F]
Hi-Temp	Viton	204°C [400°F]
H ₂ S	HSN/HNBR	149°C [300°F]
Geothermal	L'GARDE EPDM	232°C [450°F]
Steam	L'GARDE EPDM	232°C [450°F]
Hi-Temp Over 450°F	KALREZ (FFKM)*	327°C [640°F]
H ₂ S/Steam/Geothermal		

*Special Order


Model F Plunger Type Valve

Product Family No. 48013 and 48043


Model FC Automatic Fill Valve

Product Family No. 48018

Model F // Plunger Type Valve

Product Family Nos. 48013 and 48043 (Heavy Duty)

The Model F Plunger Type Valve provides positive and instantaneous shut off against high and low pressure, assuring continuous control of fluid flow during drilling. For normal drilling operations, the durable Model F is the most economical choice and is available in all sizes.

The "Heavy Duty" Model F Drill Pipe Float Valve is designed with a low alloy steel body that increases the life of the Drill Pipe Float Valve. It provides high impact resistance and is dimensionally identical to the standard Forum Drill Pipe Float Valve, allowing interchangeability of the trim. This type of Drill Pipe Float Valve is recommended for use with downhole mud motors.

Note: Not recommended for Air Drilling.

DIAGRAM KEY FOR MODEL F PLUNGER TYPE VALVE

- | | |
|---------------------------|------------------|
| 1. Valve Seal Disc | 5. Guide |
| 2. Plunger/Valve | 6. Spring |
| 3. Side Seal | 7. Cage |
| 4. Valve Seal | |

Model FC // Automatic Fill Valve

Product Family No. 48018

The Model FC Automatic Fill Valve is ideal to use when drilling deep wells. The automatic fill feature on the Model FC allows the drill pipe to fill from the bottom, thereby removing the mess, hazards, and lost time from filling. When running in the hole, the automatic fill feature eliminates the "ram effect" preventing the downhole pressure surges that can cause formation damage.

The Model FC is slotted on the stem to accept a steel "automatic fill" key assembly that is automatically released by fluid circulation releasing the plunger for complete closure.

Note: Not recommended for Air Drilling.

DIAGRAM KEY FOR MODEL FC PLUNGER TYPE VALVE

- | | |
|-------------------------|---------------------------|
| 1. Guide | 5. Valve Seal |
| 2. Cage | 6. Valve Seal Disc |
| 3. Side Seal | 7. Spring |
| 4. Plunger/Valve | 8. Key |



Model FA // Float Valve

The **Model FA** offers all the standard features of the Model F Float Valve with the added feature of a port which allows a fluid path through the center of the valve. This feature allows for an automatic partial filling of the drill pipe during run in. This valve is used when monitoring the bit head for gas pressure and/or as pockets allowing measurement of differential pressure when required.

THE MODEL FA IS AVAILABLE IN ALL SIZES.



Model FI // Float Valve

The **Model FI** also offers all the standard features of the Model F Float Valve with the added feature of an integral baffle plate at the top of the float valve. For operations where a baffle plate is always used for instrumentation or fluid control the integral baffle plate configuration offers an economical option.

THE MODEL FI IS ONLY AVAILABLE IN SIZES
2F-3R, 3F, 4R, 5R AND 5F-6R.

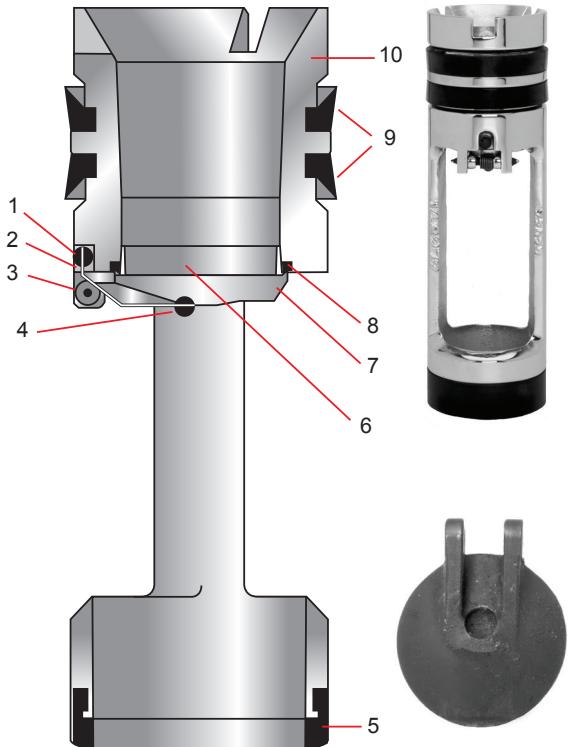


Model FS & FAS // Float Valve

The **Model FS** and **FAS** offers many of the standard features of the non-ported and ported Model F Float Valve. The Model FS/FAS was designed for mud motor applications. This application requires a short length and high fluid velocity. The FS and FSA Float Valve is only 6 inches long and has carbonized surface treatment. The side seal is an O-Ring with back-up rings which allows for a 7500psi pressure rating. See the chart on page 8 for dimensional information.

CURRENTLY THE ONLY SIZE AVAILABLE IS
3.30"OD X 6" LONG.

Flappers for Model G/GA are made of normalized, carbonized, quenched, and tempered low alloy steel to resist wear and erosion. The flapper valve opens fully during circulation providing an unrestricted bore through the valve thereby effectively prolonging the life of the valve and drill collar as there is no diversion of fluid against the drill collar ID.



Model G Full Open Valve Flapper Type
Product Family No. 48015

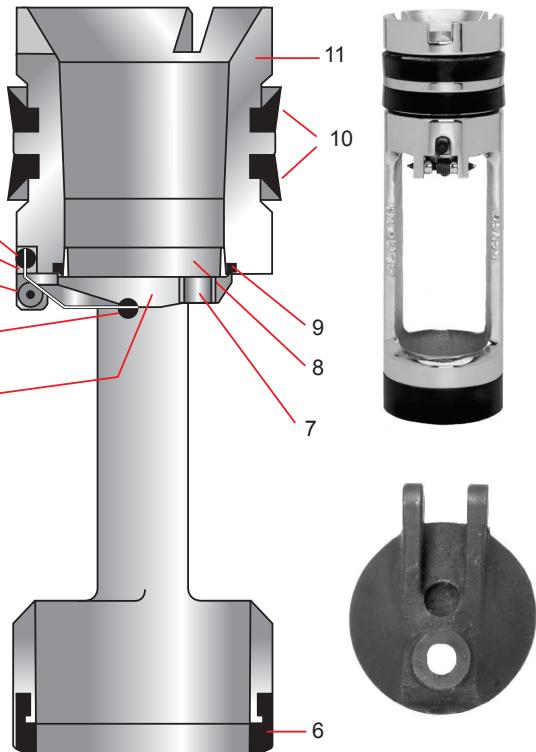
Model G // Full Open Valve Flapper Type

Product Family No. 48015

The **Model G** "Flapper Type" Full Open Valve incorporates a specially designed flapper which opens quickly and fully to provide a completely unrestricted bore through the valve. The Model G is especially good for use with highly abrasive fluids. When circulation stops, the flapper closes instantly to prevent cuttings from entering the drill string and plugging the bit. The valve opens when the first joint is raised out of the hole assuring the first joints drain and are not pulled wet. The flapper-type valve complements primary blowout prevention equipment to provide complete internal pressure control.

DIAGRAM KEY FOR MODEL G FULL OPEN VALVE FLAPPER TYPE

- | | |
|-------------------|------------------|
| 1. Small Bumper | 6. Seal Retainer |
| 2. Spring | 7. Flapper Valve |
| 3. Pin | 8. Seal |
| 4. Large Bumper | 9. Side Seal |
| 5. Shock Absorber | 10. Cage |



Model GA Differential Pressure Monitoring Valve
Product Family No. 48016

Model GA // Differential Pressure Monitoring Valve

Product Family No. 48016

The **Model GA** Differential Pressure Monitoring Valve is identical to the Model G except for a hardened 1/4 in. diameter tungsten carbide orifice bean insert in the flapper to provide automatic partial filling of the drillpipe during running in. This valve is used when monitoring the bit head for gas pressure and/or gas pockets, allowing measurement of differential pressure when required.

DIAGRAM KEY FOR MODEL GA DIFFERENTIAL PRESSURE MONITORING VALVE

- | | |
|-------------------|------------------|
| 1. Small Bumper | 7. Carbide Bean |
| 2. Spring | 8. Seal Retainer |
| 3. Pin | 9. Seal |
| 4. Large Bumper | 10. Side Seal |
| 5. Flapper Valve | 11. Cage |
| 6. Shock Absorber | |

Model GB // Air Drilling Valve

Product Family No. 48017

The **Model GB** Air Drilling Valve is designed for air drilling only. It is identical to the Model G except the spring has been removed and the beveled design of the guide greatly reduces the danger of hanging up on the float valve when retrieving tools below it.

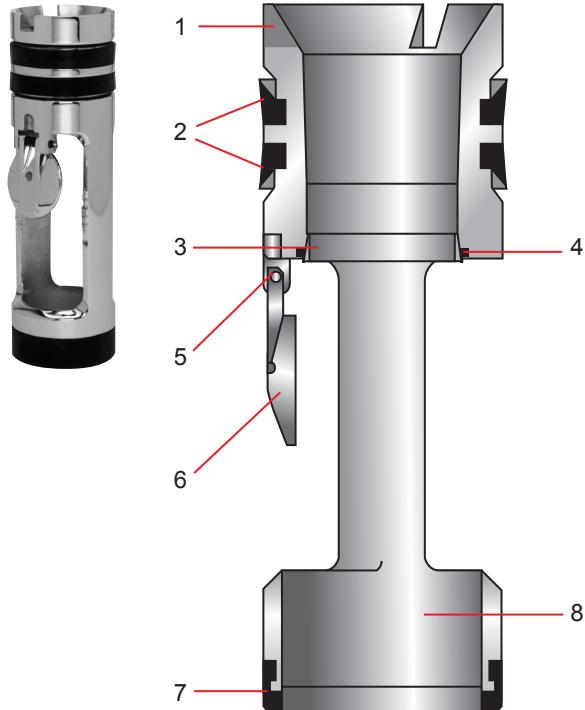
SPECIAL INSTALLATION

The Drill Pipe Float Valve is installed near the top of the drillstring. Escaping air is channeled under the flapper valve, forcing it closed, and preventing loss of pressure.

Note: In order to lose as little air as possible from the drillstring when a joint is made up, it is recommended that the float valve be moved up in the drillstring each time a new bit is installed. Caution must be exercised, however, to keep the valve at least one joint below the kelly; otherwise, the valve could be blown out of the drillpipe by trapped pressure when the kelly is removed.

DIAGRAM KEY FOR MODEL GB AIR DRILLING VALVE

- | | |
|------------------|----------------------------|
| 1. Cage | 5. Pin |
| 2. Side Seal | 6. Flapper Valve |
| 3. Seal Retainer | 7. Shock Absorber |
| 4. Seal | 8. Location of Bevel Guide |



Model GB Air Drilling Valve
Product Family No. 48017

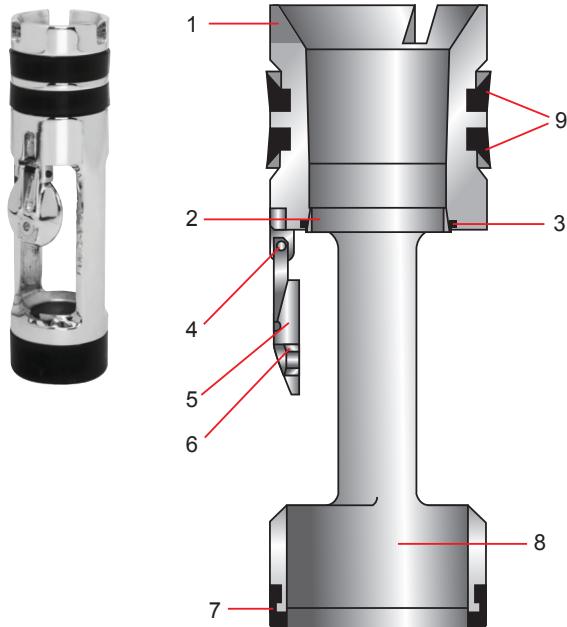
Model GBA // Air Drilling with Differential Pressure Monitoring Valve

Product Family No. 48017

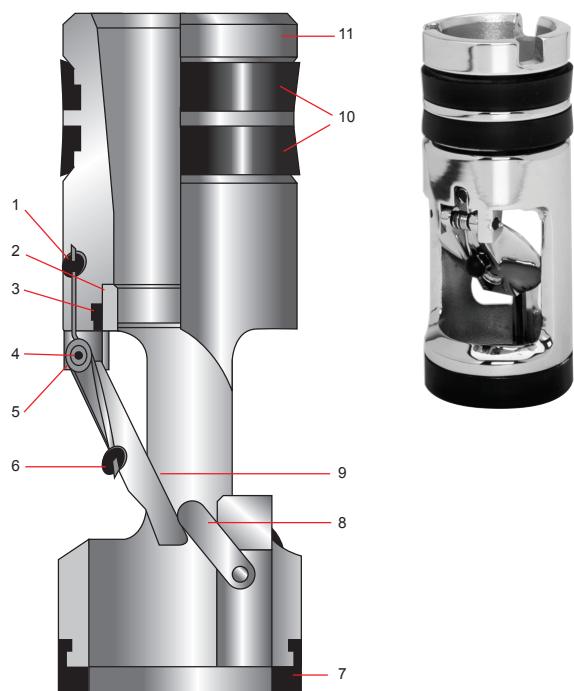
The **Model GBA** Air Drilling Valve with Differential Pressure Monitoring Valve incorporated the benefits of the Models GB and GA. The bevel design of the guide reduces the danger of hanging up on the float valve when retrieving tools. The 1/4 in. diameter tungsten carbide orifice bean insert in the flapper allows monitoring of differential pressure.

DIAGRAM KEY FOR MODEL GBA AIR DRILLING WITH DIFFERENTIAL PRESSURE MONITORING VALVE

- | | |
|------------------|----------------------------|
| 1. Cage | 6. Carbide Bean |
| 2. Seal Retainer | 7. Shock Absorber |
| 3. Seal | 8. Location of Bevel Guide |
| 4. Pin | 9. Side Seal |
| 5. Flapper Valve | |



**Model GBA Air Drilling
with Differential Pressure
Monitoring Valve**
Product Family No. 48017



Model GC Automatic Fill Flapper Type Valve
Product Family No. 48019

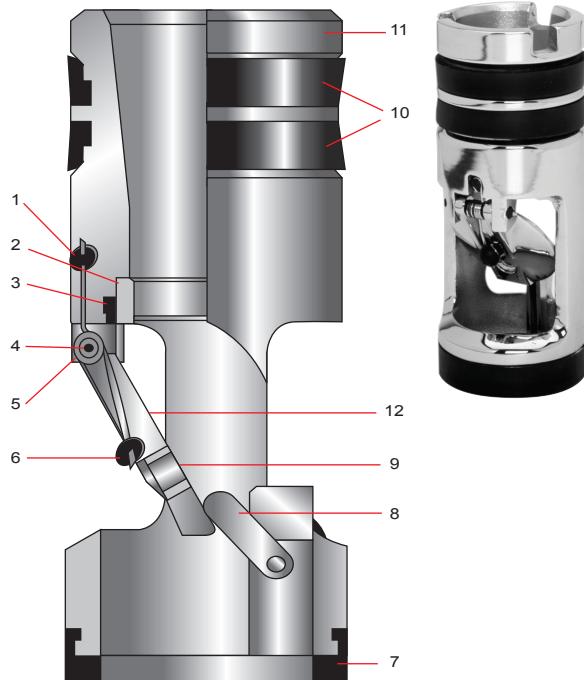
Model GC // Automatic Fill Flapper Valve

Product Family No. 48019

The Model GC Automatic Fill Flapper Valve uses a low carbon steel “automatic fill” key assembly that allows the pipe to fill from the bottom, reducing run in time by eliminating the need to fill the string from the top. When running in the hole, the automatic fill feature eliminates the “ram effect” preventing the downhole pressure surges that can cause formation damage. The valve can be run in either the closed position or the automatic fill position. The fast acting flapper valve opens when the key is pulled out of the hole reducing the possibility of pulling a wet string along with the associated safety hazards. Mud spill-over on the rig floor is also eliminated. These timesaving features allow the Model GC to quickly pay for itself.

DIAGRAM KEY FOR MODEL GC AUTOMATIC FILL FLAPPER VALVE

- | | |
|------------------|-------------------|
| 1. Small Bumper | 7. Shock Absorber |
| 2. Seal Retainer | 8. Key |
| 3. Seal | 9. Flapper Valve |
| 4. Pin | 10. Side Seal |
| 5. Spring | 11. Cage |
| 6. Large Bumper | |



Model GCA Automatic Fill with Differential Pressure Monitoring Valve
Product Family No. 48019

Model GCA // Automatic Fill with Differential Pressure Monitoring Valve

Product Family No. 48019

The Model GCA Automatic Fill with Differential Pressure Monitoring Valve incorporates the benefits of the Models GC and GA, allowing automatic partial filling of the drillpipe from the bottom, eliminating the need to fill the string from the top when running in the hole and measuring differential pressures when required.

DIAGRAM KEY FOR MODEL GCA AUTOMATIC FILL WITH DIFFERENTIAL PRESSURE MONITORING VALVE

- | | |
|------------------|-------------------|
| 1. Small Bumper | 7. Shock Absorber |
| 2. Seal Retainer | 8. Key |
| 3. Seal | 9. Carbide Bean |
| 4. Pin | 10. Side Seal |
| 5. Spring | 11. Cage |
| 6. Large Bumper | 12. Flapper Valve |

Model GS & Gas Drill Pipe Float Valves

Product Family No. 48058 and 48059 (Model GS);
48056 and 48057 (Model GAS)

Forum now offers new designs in its Forum Drill Pipe Float Valve product line. The Model GS and GAS Drill Pipe Float Valves offer optimum performance and reliability for jobs that require high flow and erosion resistance. Made of alloy steel tempered for H2S applications, the GS and GAS feature a unique flapper relief to reduce flapper spring and pin wear. The Model GS is provided with a non ported flapper and the Model GAS has a ported flapper.

Model GS and GAS are available in four Drill Pipe Valve standard configurations as noted in the table below. There are also three non standard configurations: 3.38 x 2, 4F Short, and 4.8 x 2.94. The nonstandard sizes offer maximized flow areas with a compact length for drill motor applications.

The Model GS and GAS Valves are machined to strict tolerances with a large ID to provide high flow rates and flapper valve relief in the cage to minimize fluid wear and streamline flow.

- Option: Tungsten carbide coating on flapper face for
- Model GS and Model GAS
- Machined to strict tolerances to allow O-Ring seal
- (Model GAS only)
- Machined to strict tolerances to allow for standards seals (Model GS only)
- Eliminates wear on Bit Sub, Hinge Pins, and Flapper
- Reduced flow restrictions

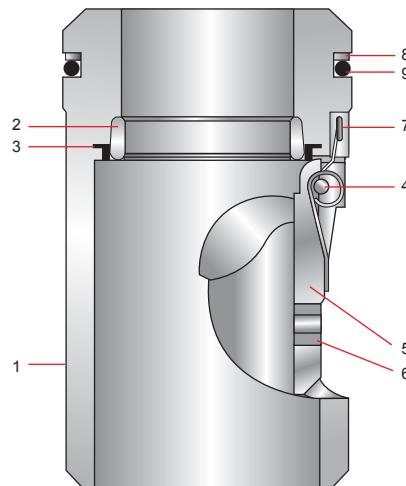
DIAGRAM KEY FOR MODEL GAS

- | | |
|-----------------------|----------------------------|
| 1. Cage | 6. Carbide Bean (GAS Only) |
| 2. Seal Retainer Ring | 7. Spring |
| 3. Seal | 8. Back-up Spiral Ring |
| 4. Pin | 9. O-Ring |
| 5. Flapper Valve | |



Model GS and GAS Mud Motor

Product Family Nos. 48058, 48056, 48057 and 48059



Model GAS Mud Motor

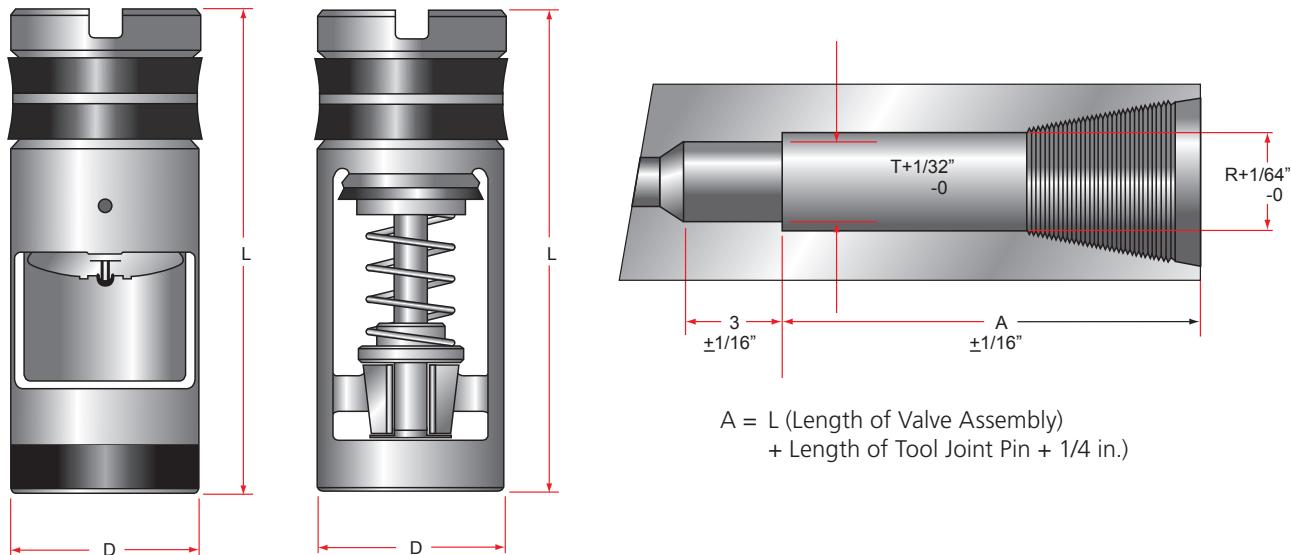
Product Family Nos. 48056 and 48057

MODEL GS AND GAS DRILL PIPE FLOAT VALVE (DIMENSIONAL DATA)

Model GS and GAS Valve Size	Model GS and GAS ID of Valve	D Diameter of Valve	R (D + 1/32) Diameter of Recess for Valve	L Length of Valve
	in.	in.	in.	in.
3.38 x 2*	1.97	3.365	3.397	6.00
3-1/2 IF	1.63	3.125	3.156	10.00
4R	1.97	3.469	3.500	8.31
4F Short	2.19	3.656	3.688	7.75
5R	2.25	3.875	3.907	9.75
4.8 x 2.94	2.88	4.805	4.813	7.94
5F6R	2.88	4.781	4.813	11.75

*Model GC and GAS for this valve size only. ID is 2.00"

Dimensional Information for all Styles of Model F and G Drill Pipe Float Valves



MODEL F AND G DRILL PIPE FLOAT VALVE (DIMENSION DATA)

Valve Size	Diameter of Valve	R (D + 1/32) Diameter of Recess for Valve	L Length of Valve	T* Diameter of Recess for Baffle Plate	ID of Valve	
	in.	in.	in.	in.	Model F	Model G
1R	1-21/32	1-11/16	5-7/8	1-5/16	1	N/A
1F-2R	1-29/32	1-15/16	6-1/4	1-1/2	1-1/4	1
2F-3R	2-13/32	2-7/16	6-1/2	1-29/32	1-9/16	1-1/4
3F	2-13/16	2-27/32	10	2-7/16	1-7/8	1-5/8
3-1/2 IF	3-1/8	3-5/32		2-11/16		
4R	3-15/32	3-1/2	8-5/16	2-15/16	2-5/16	1-31/32
4F	3-21/32	3-11/16	12	3-1/4	2-1/2	2-3/16
5R	3-7/8	3-29/32	9-3/4	3-3/8	2-3/4	2-1/4
5F-6R	4-25/32	4-13/16	11-3/4	4-9/32	3-1/4	2-7/8
6F	5-11/16	5-23/32	14-5/8	5-3/16	4-1/8	N/A

*Disregard if this diameter is the same or smaller than standard tool joint ID.

Note: The Dimensional Information Chart is not for Models GS and GAS Drill Pipe Float Valves.

N/A = Non-Applicable.

RECUTTING BODY OR BORING OUT DRILL COLLARS

Model F and G Drill Pipe Float Valves are identical in outside dimensions and use the same float sub or bored-out drill collar. Float Subs are made in lengths from 14 in. to 30 in. depending on size and type, and designed for two recuts, two on either end or one on each end.

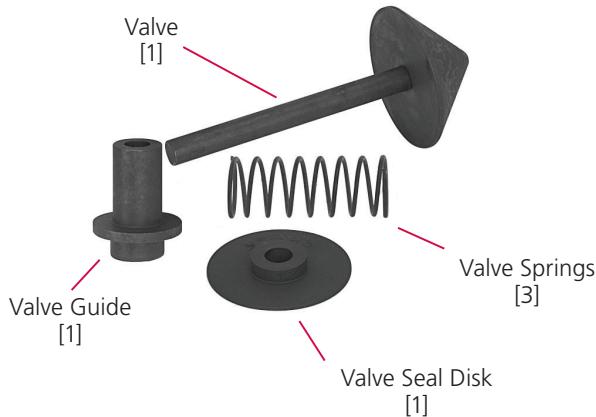
Each time the tool joint box is recut, however, the shoulder of the lower end of the body bore must be cut back to maintain when the body is recut. Bodies longer than the standard 3 ft. in length allow more recuts and can be furnished on special order.

Repair Kits for all Styles of Model F and G DPFV

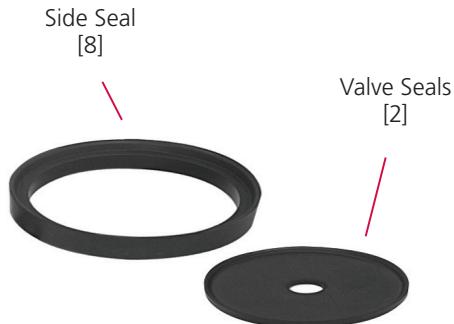
FORUM
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Repair Kits for all Styles of Model F Drill Pipe Float Valves

METAL KIT FOR MODEL F
DRILL PIPE FLOAT VALVES

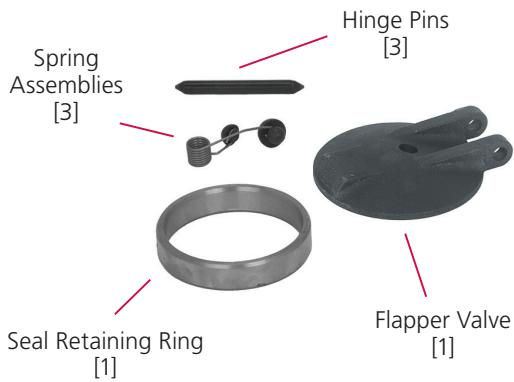


RUBBER KIT FOR MODEL F
DRILL PIPE FLOAT VALVES

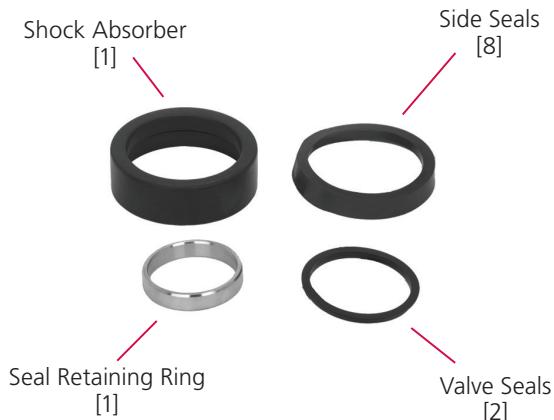


Repair Kits for all Styles of Model G Drill Pipe Float Valves

METAL KIT FOR MODEL G
DRILL PIPE FLOAT VALVES



RUBBER KIT FOR MODEL G
DRILL PIPE FLOAT VALVES



Valve Pullers for all Styles of Model F Drill Pipe Float Valves

Product Family No. 48091

The Valve Puller consists of a finger sub that is stabbed into the bottom end of the Drill Pipe Float Valve Cage and engages the web by right-handed rotation.



Valve Puller for F Models
Product Family No. 48091

Caution:

When pulling a Model FC, the release key on the Drill Pipe Float Valve must be positioned such that the finger sub does not contact the key prior to engaging the web of the cage. This will prevent damage to the key during valve removal.

Product Family No. 48090

The valve puller consists of a fork that engages the cage of the Drill Pipe Float Valve. The driver is then forcefully pulled upward to quickly and easily remove the valve from the cavity in the float sub or drill collar.



Valve Puller for G Models

Product Family No. 48090

BAFFLE PLATES

Product Family No. WVT791

Forum Baffle Plates are installed on top of the Drill Pipe Float Valve as a landing tool for recorders, thus preventing the recorder from entering the Drill Pipe Float valve and possibly the drill bit.



Baffle Plates

Product Family No. WVT791

Baffle Plate Ring AND Spider Type (Major OD AND ID Dimensions)

Item Number	Description	DPFV	Ring or Spider OD	Inner Ring ID
WVT791701	Baffle Plate, Spider Type 2-7/8 API Reg.	1F-2R	1.94"	.94"
WVT791701M	Baffle Plate, Spider Type 2-7/8 API Reg.	1F-2R	1.90"	.94"
WVT791702	Baffle Plate, Ring Type 3-1/2 API Reg.	2F-3R	2.28"	.75"
WVT791703	Baffle Plate, Ring Type 4-1/2 API Reg.	4R	3.22"	1.13"
WVT791704	Baffle Plate, Ring Type 5-1/2 API IF	5R	3.87"	1.25"
WVT791705	Baffle Plate, Ring Type 6-5/8 API Reg.	5F-6R	4.63"	1.25"
WVT791706	Baffle Plate, Ring Type 7-5/8 API Reg.	5F-6R	5.33"	1.135"
WVT791707	Baffle Plate, Ring Type 8-5/8 API Reg.	6F	6.22"	1.125"
WVT791711	Baffle Plate, Spider Type 3-1/2 API Full Hole	3F	2.75"	1.00"
WVT791712	Baffle Plate, Ring Type 4-1/2 API Reg.	4F	3.25"	1.25"
WVT791713	Baffle Plate, Ring Type 5-9/16 API Full Hole	5F-6R	4.63"	1.25"
WVT791714	Baffle Plate, Ring Type 6-5/8 API Full Hole	6F	5.38"	1.25"
WVT791721	Baffle Plate, Spider Type 3-1/2 API Full Hole	3F	2.63"	1.00"
WVT791722	Baffle Plate, Spider Type F/4R, 4F, 5R	4R, 4F, 5R	3.44"	1.00"
WVT791723	Baffle Plate, Spider Type 5-9/16 FH, 6-5/8 API Reg.	5F-6R	4.68"	1.29"
WVT791724	Baffle Plate, Spider Type 6-5/8 API Full Hole	6F	6.56"	1.25"
WVT791725	Baffle Plate, Spider Type 3.5 IF	3-1/2 IF	3.06"	1.00"
WVT791726	Baffle Plate, Spider Type	5R	3.76"	1.00"
WVT791740	Baffle Plate, Spider Type 2-7/8 API IF	2F-3R	2.34"	1.00"
WVT791741	Baffle Plate, Ring Type 3.5 IF	3-1/2 IF	3.06"	1.13"
WVT791742	Baffle Plate, Ring Type 4.5 IF	5R	4.22"	1.25"
WVT791743	Baffle Plate, Spider Type F/NC31 2-7/8 IF	2F-3R	2.40"	1.00"
WVT791744	Baffle Plate, Ring Type NC46, 4 IF	4F	3.88"	1.25"

Coil Tubing Float Valve (CTFV)

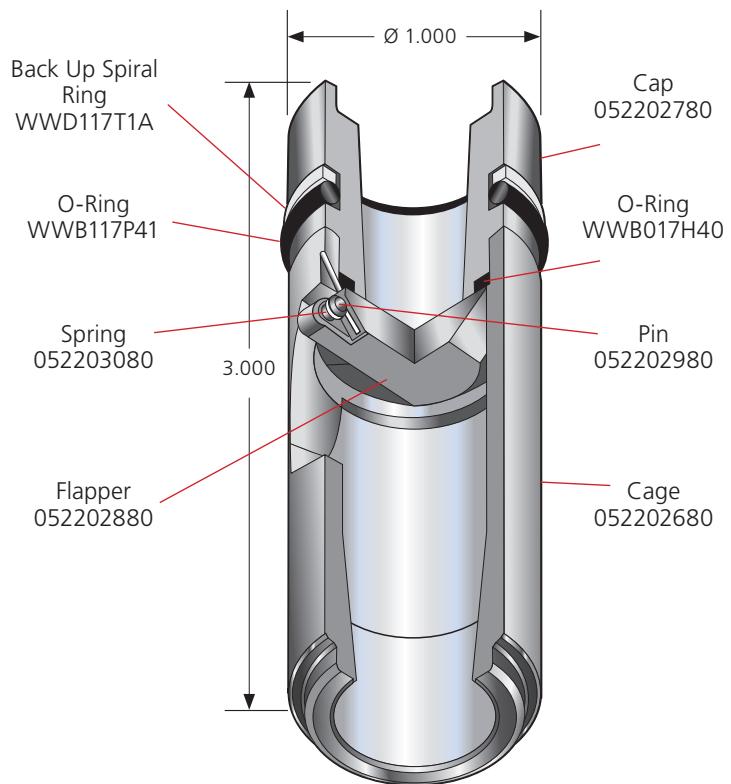
Following in the tradition of Baker Drill Pipe Float Valve, Forum SPD is introducing a float valve sized for coil tubing application. The CTFV has the basic features of a Model GS float valve, but sized for coil tubing bottom hole assemblies and subs.

- Cap and cage are corrosion resistant 9 Chr. 1 moly alloy steel.
- Flapper is surface hardened for long life.
- Cage design allows stacking for redundant sealing.



Coil Tubing Float Valve

Product Family No. 481

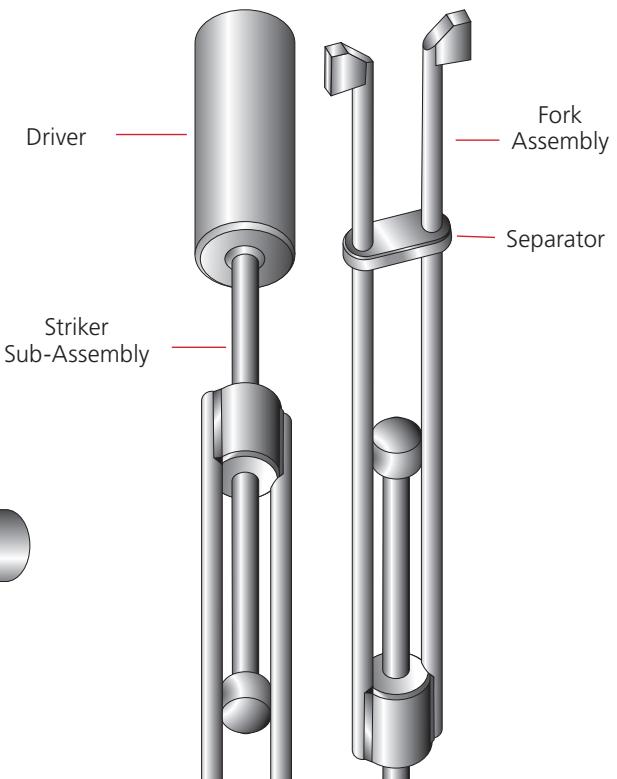


Model F // Valve "Top" Puller

Product Family No. 48093

This puller design is used to remove float valves from the top of the sub. The valve "Top" puller consists of a two prong fork, when squeezed together and pushed against the head of the valve dart, it can be moved down. The tang at ends of the fork will then engage the cage and allow the float valve to be pulled. To release the puller, slide the separator clip away from the valve. Squeeze the forks together to allow puller to be removed from valve.

**AVAILABLE FOR SIZES: 3-1/2 IF & 4R
OTHER SIZES AVAILABLE ON REQUEST.**



SPECIFICATION GUIDE

Tool Joint Types	1R	1F-2R	2F-3R	3F	3-1/2 IF	4R	4F	5R	5F-6R	6F
API Regular	2- 3/8	2-7/8	3-1/2			4-1/2		5-1/2 5-9/16*	6-5/8 7-5/8•	8-5/8
Hughes or Reed Acme Regular	2-3/8	2-7/8	3-1/2			4-1/2		5-1/2 5-9/16	6-5/8	
Union Tool	2-3/8	2-7/8 3-1/2					4-1/2	5-1/2 5-9/16*	6-5/8•	
Hughes or Reed Double Streamline	2-7/8 2-3/8	3-1/2	4 4-1/2				5	5-1/2 5-9/16*		
API Full Hole	2-3/8	2-7/8	3-1/2	4	4-1/2	4-1/2*			6-5/8*	
Reed Acme Full Hole			3-1/2*			4-1/2*		5-1/2 5-9/16*		
Hughes Acme Streamline	2-3/8	2-7/8	3-1/2*			4-1/2*		5-1/2 5-9/16*		
Hughes Xtra Hole		2-7/8	3-1/2			4-1/2	5	5-1/2 5-9/16*		
Reed Semi-Internal Flush		2-7/8	3-1/2			4-1/2	5			
API Internal Flush	2-3/8	2-7/8		3-1/2		4	4-1/2*			
Hydri Type "IF" (Internal Flush Ext Upset)	2-3/8*	2-7/8*	3-1/2*				4-1/2	5		
Hydri "EIU" (External Internal Upset)			3-1/2		4	4-1/2		5-1/2 5-9/16*	6-5/8	
Hydri Type "F" (External Flush)	2-7/8 3-1/2*		4-1/2 5		5-1/2 5-9/16		6-5/8			
Hughes Ext Flush Acme Type		3-1/2	4-1/2		5-1/2 5-9/16		6-5/8			
Hughes Ext Flush Full Hole Type			4-1/2							

Shaded areas indicate sizes available in Models G, GA, GCA, and GBA. Model F available in all sizes. Model FC available in all sizes, except 1R and 1F-2R.

* Float sub in these sizes has smaller ID than standard tool joint.

• Interchangeable

BIT AND SHANK SIZES

Bit Size (in.)	3-1/4	3-3/8	4-1/2	4-3/4	5-1/2	6	6-1/8	6-1/4	6-1/2	6-3/4	7-7/8	8-1/4
Std API Pin Shank Size (in.)	2-3/8	2-3/8	2-3/8	2-7/8	3-1/2	3-1/2	3-1/2	3-1/2	3-1/2	3-1/2	4-1/2	4-1/2
Bit Size (in.)	8-1/2	8-3/4	9-1/2	9-3/4	10-1/2	11	12-1/4	13-1/2	20	24	25	
Std API Pin Shank Size (in.)	4-1/2	4-1/2	6-5/8	6-5/8	6-5/8	6-5/8	6-5/8	6-5/8	7-5/8	7-5/8	7-5/8	

BIT SUB INFORMATION

Valve Size	Threads (in.)	Tool Joint Type	STD/OD (in.)	Face-to-Shoulder or Face-toFace (in)
1R	2-3/8	API Regular	3-1/8	18
1F-2R	2-7/8		3-3/4	20
2F-3R	3-1/2		4-1/4	
4R	4-1/2		5-1/2	24
5R	5-1/2		6-3/4	28
5F-6R	6-5/8		7-3/4	
5F-6R	7-5/8		8-7/8	30
6F	8-5/8		10	
3F	3-1/2	API Full Hole	4-5/8	24
3-1/2 1F	4		5-1/4	
4F	4-1/2		5-3/4	28
5F-6R	5-1/2		7	30
6F	6-5/8		8	
1F-2R	2-3/8		3-3/8	18
2F-3R	2-7/8		4-1/8	20
3-1/2 1F	3-1/2		4-3/4	24
4F	4	API IF	5-3/4	28
5R	4-1/2		6-3/8	
5F-6R	5-1/2		7-3/8	
6F	6-5/8		8-3/4	30

Note: Box and/or pin specification required.

Note: The box and/or pin connection on Drill Pipe Float Subs should not be mated with old tool joints. In addition, the sub should not be made up in the top of a drill collar unless the box on the drill collar has been machined beforehand and new joints placed on the drill collar to mate with the upper box connection in the Drill Pipe Float Sub.

Note: Other sizes are provided upon request.

Ordering Information // Standard Application

BUNA SEALS // MODEL F PLUNGER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1R	480131200	016012200	015929800	480911200
1F - 2R	480131422	016012300	016011300	480911200
2F - 3R	480132432	016012400	016011400	480912432
3F	480133400	016012500	016011500	480913400
3 - 1/2 IF	480133600	016012600	016011500	480913400
4R	480134200	016012700	016011700	480914200
4F	480134400	016012800	016011800	480914400
5R	480135200	016012900	016011900	480915200
5F - 6R	480135462	016013000	016012000	480915462
6F	480136400	016013100	016012100	480916400

BUNA SEALS // MODEL FA PLUNGER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1R	480121200	016012205	015929805	480911200
1F - 2R	480121422	016012305	016011305	480911200
2F - 3R	480122432	016012405	016011405	480912432
3F	480123400	016012505	016011505	480913400
3 - 1/2 IF	480123600	016012605	016011505	480913400
4R	480124200	016012705	016011705	480914200
4F	480124400	016012805	016011805	480914400
5R	480125200	016012905	016011905	480915200
5F - 6R	480125462	016013005	016012005	480915462
6F	480126400	016013105	016012105	480916400

BUNA SEALS // MODEL FC PLUNGER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
2F - 3R	480182432	016012400	070017100	480912432
3F	480183400	016012500	070017300	480913400
3 - 1/2 IF	480183600	016012600	070017300	480913400
4R	480184200	016012700	070017400	480914200
4F	480184400	016012800	070017500	480914400
5R	480185200	016012900	070017600	480915200
5F - 6R	480185462	016013000	070017700	480915462
6F	480186400	016013100	070017800	480916400

BUNA SEALS // MODEL G FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480151422	051988300	051988400	480901422
2F - 3R	480152432	016013800	016013200	480902432
3F	480153400	016013900	016013300	480903400
3 - 1/2 IF	480153600	051982000	052070200	480903400
4R	480154200	016014000	016013400	480904200
4F	480154400	016014100	016013500	480904400
5R	480155200	016014200	016013600	480905200
5F - 6R	480155462	016014300	016013700	480905462

BUNA SEALS // MODEL GA FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480161422	051988300	052070800	480901422
2F - 3R	480162432	016013800	017135000	480902432
3F	480163400	016013900	017136700	480903400
3 - 1/2 IF	480163600	051982000	052075500	480903400
4R	480164200	016014000	017116000	480904200
4F	480164400	016014100	017136800	480904400
5R	480165200	016014200	017136900	480905200
5F - 6R	480165462	016014300	017134200	480905462

Ordering Information // Standard Application

BUNA SEALS // MODEL GAS FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
3 - 1/2 IF	480563600	016016000	017138000	480903400
3.38 x 2	480564290	016014500	017134400	480903400
4R	480564200	016019000	017116000	480904200
4F	480564400	016020000	017136800	480904400
5R	480565200	016017000	017139000	480905200
4.8 x 2.94	480625462	016021000	017134300	480905462
5F - 6R	480565462	016015000	017137000	480905462

BUNA SEALS // MODEL GC FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480191422	051988300	051988400	480901422
2F - 3R	480192432	016013800	016013200	480902432
3F	480193400	016013900	016013300	480903400
3 - 1/2 IF	480193600	051982000	052070200	480903400
4R	480194200	016014000	016013400	480904200
4F	480194400	016014100	016013500	480904400
5R	480195200	016014200	016013600	480905200
5F - 6R	480195462	016014300	016013700	480905462

BUNA SEALS // MODEL GCA FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480191423	051988300	052070800	480901422
2F - 3R	480192433	016013800	017135000	480902432
3F	480193401	016013900	017136700	480903400
3 - 1/2 IF	480193601	051982000	052075500	480903400
4R	480194201	016014000	017116000	480904200
4F	480194401	016014100	017136800	480904400
5R	480195201	016014200	017136900	480905200
5F - 6R	480195463	016014300	017134200	480905462

BUNA SEALS // MODEL GS FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
3 - 1/2 IF	480603600	016016000	052070200	480903400
3.38 x 2	480604290	016014500	052070300	480903400
4R	480604200	016019000	016013400	480904200
4F	480604400	016020000	016013500	480904400
5R	480605200	016017000	016013600	480905200
4.8 x 2.94	480595462	016014400	017134500	480905462
5F - 6R	480605462	016015000	016013700	480905462

Ordering Information // Hydrogen Sulfide (H₂S) Application

HSN SEALS // MODEL F PLUNGER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1R	480301200	071081701	071084901	480911200
1F - 2R	480301422	071081801	071085001	480911200
2F - 3R	480302432*	071081901	071085101	480912432
3F	480303400	071082001	071085201	480913400
3 - 1/2 IF	480303600*	071082101	071085301	480913400
4R	480304200*	071082201	071085401	480914200
4F	480304400	071082301	071085501	480914400
5R	480305200*	071082401	071085601	480915200
5F - 6R	480305462*	071082501	071085701	480915462
6F	480306400	071082601	071085801	480916400
HSN SEALS // MODEL FA PLUNGER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1R	480351200	071081705	071084905	480911200
1F - 2R	480351422	071081805	071085005	480911200
2F - 3R	480352432*	071081905	071085105	480912432
3F	480353400	071082005	071085205	480913400
3 - 1/2 IF	480353600*	071082105	071085305	480913400
4R	480354200*	071082205	071085405	480914200
4F	480354400	071082305	071085505	480914400
5R	480355200*	071082405	071085605	480915200
5F - 6R	480355462*	071082505	071085705	480915462
6F	480356400	071082605	071085805	480916400
HSN SEALS // MODEL FC PLUNGER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
2F - 3R	480322432	071081901	070017100	480912432
3F	480323400	071082001	070017300	480913400
3 - 1/2 IF	480323600	071082101	070017300	480913400
4R	480324200	071082201	070017400	480914200
4F	480324400	071082301	070017500	480914400
5R	480325200	071082401	070017600	480915200
5F - 6R	480325462	071082501	070017700	480915462
6F	480326400	071082601	070017800	480916400
HSN SEALS // MODEL G Flapper TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480311422	051997200	051997300	480901422
2F - 3R	480312432*	071082701	071085901	480902432
3F	480313400	071082801	071086001	480903400
3 - 1/2 IF	480313600*	052125001	052125101	480903400
4R	480314200*	071082901	071086101	480904200
4F	480314400	071083001	071086201	480904400
5R	480315200*	071083101	071086301	480905200
5F - 6R	480315462*	071083201	071086401	480905462
HSN SEALS // MODEL GA Flapper TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480261422	051997200	052070802	480901422
2F - 3R	480262432*	071082701	017135001	480902432
3F	480263400	071082801	017136701	480903400
3 - 1/2 IF	480263600*	052125001	052075502	480903400
4R	480264200*	071082901	017116002	480904200
4F	480264400	071083001	017136801	480904400
5R	480265200*	071083101	017136901	480905200
5F - 6R	480265462*	071083201	017134201	480905462

*Certified valve available

Ordering Information // Hydrogen Sulfide (H₂S) Application

HSN SEALS // MODEL GAS Flapper TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
3 - 1/2 IF	480693600	016016001	017138002	480903400
3.38 x 2	480694290	016014501	017134402	480903400
4R	480694200	016019001	017116002	480904200
4F	480694400	016020001	017136802	480904400
5R	480695200	016017001	017139002	480905200
4.8 x 2.94	480645462	016021001	017134302	480905462
5F - 6R	480695462	016015001	017137002	480905462

HSN SEALS // MODEL GC FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480331422	051997200	051997300	480901422
2F - 3R	480332432*	071082701	071085901	480902432
3F	480333400	071082801	071086001	480903400
3 - 1/2 IF	480333600*	052125001	052125101	480903400
4R	480334200*	071082901	071086101	480904200
4F	480334400	071083001	071086201	480904400
5R	480195200*	071083101	071086301	480905200
5F - 6R	480335462*	071083201	071086401	480905462

HSN SEALS // MODEL GCA FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480451423	051997200	052070802	480901422
2F - 3R	480452433*	071082701	017135001	480902432
3F	480453401	071082801	017136701	480903400
3 - 1/2 IF	480453601*	052125001	052075502	480903400
4R	480454201*	071082901	017116002	480904200
4F	480454401	071083001	017136801	480904400
5R	480455201*	071083101	017136901	480905200
5F - 6R	480455463*	071083201	017134201	480905462

HSN SEALS // MODEL GS Flapper TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
3 - 1/2 IF	480683600	016016000	052070200	480903400
3.38 x 2	480684290	016014500	052070300	480903400
4R	480684200	016019000	016013400	480904200
4F	480684400	016020000	016013500	480904400
5R	480685200	016017000	016013600	480905200
4.8 x 2.94	480635462	016014400	017134500	480905462
5F - 6R	480685462	016015000	016013700	480905462

*Certified valve available

Ordering Information // Hi-Temp Application

Viton SEALS // MODEL F PLUNGER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1R	480361200	072081703	071084901	480911200
1F - 2R	480361422	072081803	071085001	480911200
2F - 3R	480362432*	072081903	071085101	480912432
3F	480363400	072082003	071085201	480913400
3 - 1/2 IF	480363600*	072082103	071085301	480913400
4R	480364200*	072082203	071085401	480914200
4F	480364400	072082303	071085501	480914400
5R	480365200*	072082403	071085601	480915200
5F - 6R	480365462*	072082503	071085701	480915462
6F	480366400	072082603	071085801	480916400
Viton SEALS // MODEL FA PLUNGER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1R	480411200	072081705	071084905	480911200
1F - 2R	480411422	072081805	071085005	480911200
2F - 3R	480412432*	072081905	071085105	480912432
3F	480413400	072082005	071085205	480913400
3 - 1/2 IF	480413600*	072082105	071085305	480913400
4R	480414200*	072082205	071085405	480914200
4F	480414400	072082305	071085505	480914400
5R	480415200*	072082405	071085605	480915200
5F - 6R	480415462*	072082505	071085705	480915462
6F	480416400	072082605	071085805	480916400
Viton SEALS // MODEL FC PLUNGER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
2F - 3R	480382432	072081903	070017100	480912432
3F	480383400	072082003	070017300	480913400
3 - 1/2 IF	480383600	072082103	070017300	480913400
4R	480384200	072082203	070017400	480914200
4F	480384400	072082303	070017500	480914400
5R	480385200	072082403	070017600	480915200
5F - 6R	480385462	072082503	070017700	480915462
6F	480386400	072082603	070017800	480916400
Viton SEALS // MODEL G Flapper TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480371422	051988303	051988403	480901422
2F - 3R	480372432*	016013803	016013203	480902432
3F	480373400	016013903	016013303	480903400
3 - 1/2 IF	480373600*	051982003	052070203	480903400
4R	480374200*	016014003	016013403	480904200
4F	480374400	016014103	016013503	480904400
5R	480375200*	016014203	016013603	480905200
5F - 6R	480375462*	016014303	016013703	480905462

*Certified valve available

Ordering Information // Hi-Temp Application

Viton SEALS // MODEL GA Flapper TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480441422	051988303	052070803	480901422
2F - 3R	480442432*	016013803	017135003	480902432
3F	480443400	016013903	017136703	480903400
3 - 1/2 IF	480443600*	051982003	052075503	480903400
4R	480444200*	016014001	017116001	480904200
4F	480444400	016014103	017136803	480904400
5R	480445200*	016014203	017136903	480905200
5F - 6R	480445462*	016014303	017134203	480905462

Viton SEALS // MODEL GAS Flapper TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
3 - 1/2 IF	480713600	016016003	017138003	480903400
3.38 x 2	480714290	016014503	017134403	480903400
4R	480714200	016014003	017116003	480904200
4F	480714400	016014003	017136803	480904400
5R	480715200	016017003	017139003	480905200
4.8 x 2.94	480715462	016014103	017134303	480905462
5F - 6R	480715462	016015003	017137003	480905462

Viton SEALS // MODEL GC FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480391422	051988303	051988403	480901422
2F - 3R	480392432*	016013803	016013203	480902432
3F	480393400	016013903	016013303	480903400
3 - 1/2 IF	480393600*	051982000	052070200	480903400
4R	480394200*	016014003	016013403	480904200
4F	480394400	016014103	016013503	480904400
5R	480395200*	016014203	016013603	480905200
5F - 6R	480395462*	016014303	016013703	480905462

Viton SEALS // MODEL GCA FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480391423	051988303	052070803	480901422
2F - 3R	480392433*	016013803	017135003	480902432
3F	480393401	016013903	017136703	480903400
3 - 1/2 IF	480393601*	051982000	052075503	480903400
4R	480394201*	016014003	017116001	480904200
4F	480394401	016014103	017136803	480904400
5R	480395201*	016014203	017136903	480905200
5F - 6R	480395463*	016014303	017134203	480905462

*Certified valve available

Ordering Information // Steam/Geothermal Application

L'Garde EPDM // MODEL F PLUNGER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1R	480201200	070502400	071084901	480911200
1F - 2R	480201422	070502500	071085001	480911200
2F - 3R	480202432	070502600	071085101	480912432
3F	480203400	070502700	071085201	480913400
3 - 1/2 IF	480203600	070502800	071085301	480913400
4R	480204200	070502900	071085401	480914200
4F	480204400	070503000	071085501	480914400
5R	480205200	070503100	071085601	480915200
5F - 6R	480205462	070503200	071085701	480915462
6F	480206400	070503300	071085801	480916400
L'Garde EPDM // MODEL G Flapper TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480211422	070305500	051988402	480901422
2F - 3R	480212432	070305600	016013202	480902432
3F	480213400	070305700	016013302	480903400
3 - 1/2 IF	480213600	070306200	052070202	480903400
4R	480214200	070305800	016013402	480904200
4F	480214400	070305900	016013502	480904400
5R	480215200	070306000	016013602	480905200
5F - 6R	480215462	070306100	016013702	480905462
L'Garde EPDM // MODEL GA Flapper TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480221422	070305500	052070801	480901422
2F - 3R	480222432	070305600	017135002	480902432
3F	480223400	070305700	017136702	480903400
3 - 1/2 IF	480223600	070306200	052075501	480903400
4R	480224200	070305800	017116003	480904200
4F	480224400	070305900	017136802	480904400
5R	480225200	070306000	017136902	480905200
5F - 6R	480225462	070306100	017134202	480905462
L'Garde EPDM // MODEL GC FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480241422	070305500	051988402	480901422
2F - 3R	480242432	070305600	016013202	480902432
3F	480243400	070305700	016013302	480903400
3 - 1/2 IF	480243600	070306200	052070202	480903400
4R	480244200	070305800	016013402	480904200
4F	480244400	070305900	016013502	480904400
5R	480245200	070306000	016013602	480905200
5F - 6R	480245462	070306100	016013702	480905462
L'Garde EPDM // MODEL GCA FLAPPER TYPE VALVE				
Float Valve Size	Assembly	Rubber Repair Kit	Metal Repair Kit	Puller Assembly
1F - 2R	480251422	070305500	052070801	480901422
2F - 3R	480252432	070305600	017135002	480902432
3F	480253400	070305700	017136702	480903400
3 - 1/2 IF	480253600	070306200	052075501	480903400
4R	480254200	070305800	017116003	480904200
4F	480254400	070305900	017136802	480904400
5R	480255200	070306000	017136902	480905200
5F - 6R	480255462	070306100	017134202	480905462

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Our goal is to become the leading provider of mission critical oilfield products and related services in terms of customer satisfaction, safety and financial performance.

Our experienced management team and employees are dedicated to solving our customers' problems. We invest in long term relationships and cooperate on product development with our clients, we consider them our partners.

OUR CORE VALUES

No one gets hurt: The safety of our employees and customers is our first priority coupled with a healthy respect for the environment.

Integrity: In everything we do, in every interaction, both internally and externally, we strive to operate with the upmost integrity and mutual respect.

Customer focused: Our products enhance our customer's performance and we listen to their needs and work with them to solve their challenges.

Good place to work: We are committed to creating a workplace that fosters innovation, teamwork and pride. Every team member is integral to our success and is treated equally and fairly.



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DRL1100.02.2019