

# How to Identify a PBM VALVE SERIES

## Series 0 (SP, DP, MP)

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1. If it is a manual valve, the handle generally would be made of a cast iron or cast bronze.
2. If it is a manual valve, the stem at the very top is round and threaded followed by a square area right underneath. If automated, sometimes, not all the time, the round threaded area may be cut off.
3. There is a threaded packing gland (round with 2 or 4 flats) that threads down into the body holding the stem in (Part C below).
4. When repairing the valve the stem is inserted into the top of the body (Part D below).
5. There are no Belleville spring washers (not split washers) on the stem assembly.



## Revisions within Series 0

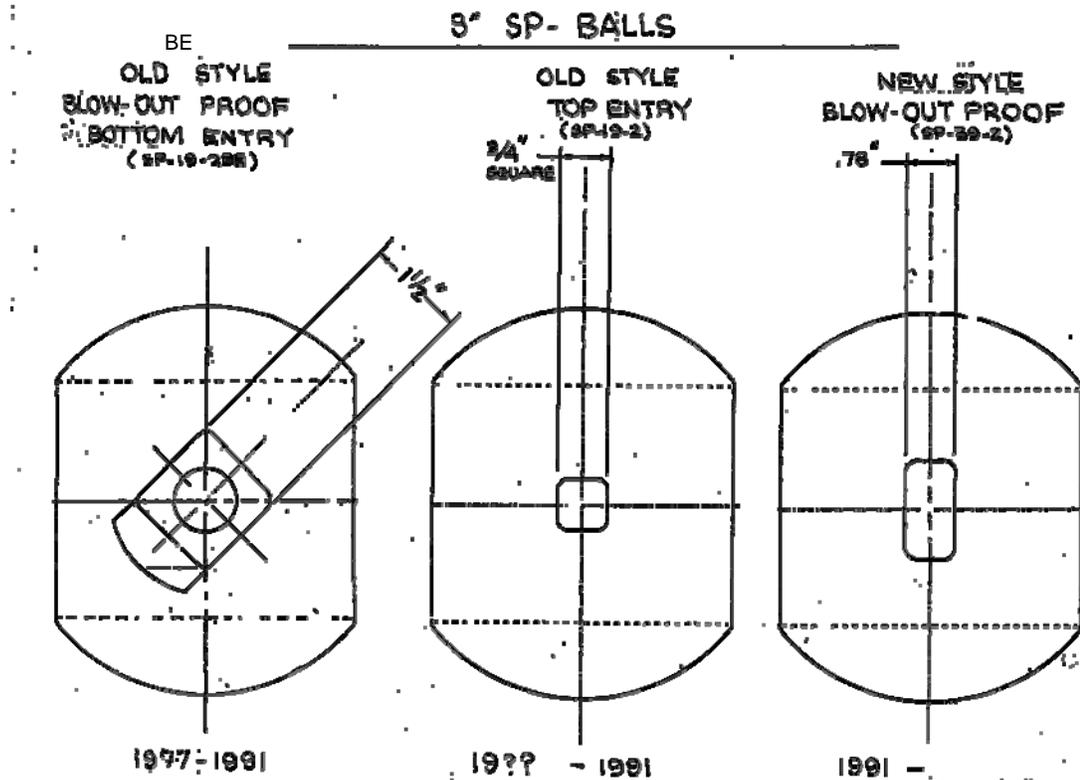
### 1. BE Series

This was the first for PBM as a blow-out proof stem design. (All sizes ½” through 6”, SP, FT, MP, DP). To identify this revision on the exterior of the valve look at the large gland nut that threads down into the body holding the stem in. If it is a HEX pattern it will be a BE design on ½” through 4”.

To identify this valve internally, look at the ball and stem engagement. The BE revision has a large square (larger than the diameter of the top of the stem) on the bottom of the stem and a large female square cut on the top of the ball. This is the only way to determine a 6” valve. (See below)

If parts are required for this series, the following are non-standard parts:

Part	Part Number
Gland	SPK-(SIZE LETTER)006B-
Stem Support	SPRT(SIZE LETTER)035
Ball	SPHL(SIZE LETTER)002B-
Stem	SPHL(SIZE LETTER)005B-



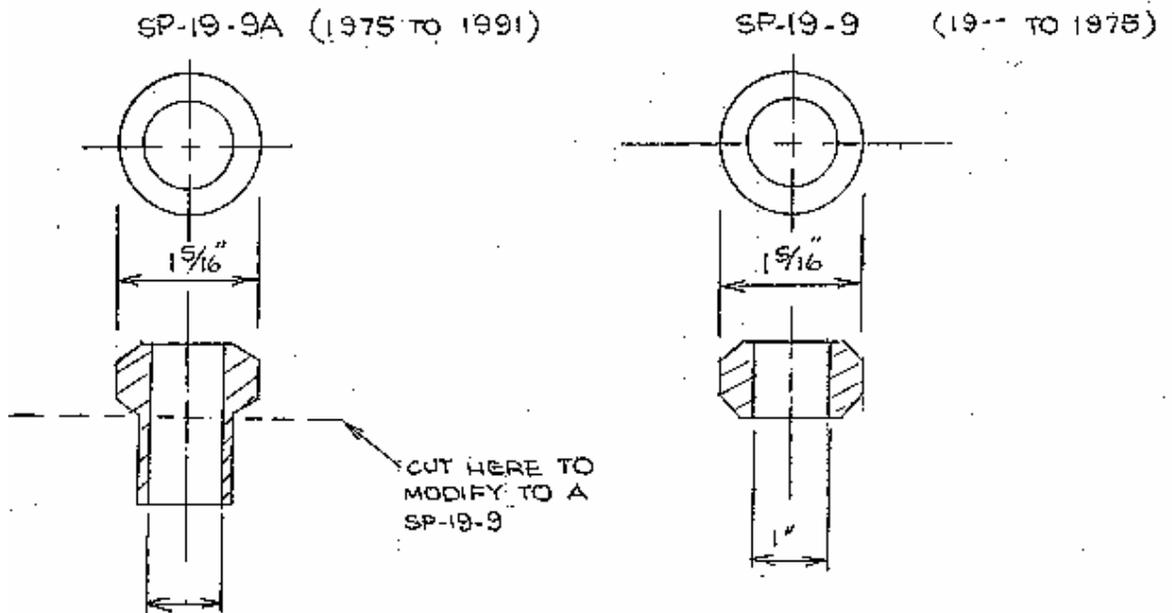
2. **3"&4" SP/FT/DP & 3" MP Stem Packing**

There some valves out there with a shorter stem packing in the above sizes and series. (See below)

**SPRTK009A- Longer packing**

**SPRTK009 Shorter packing**

**Note:** SPRTK009 can be made from an SPRTK009A- by cutting off the sleeve.

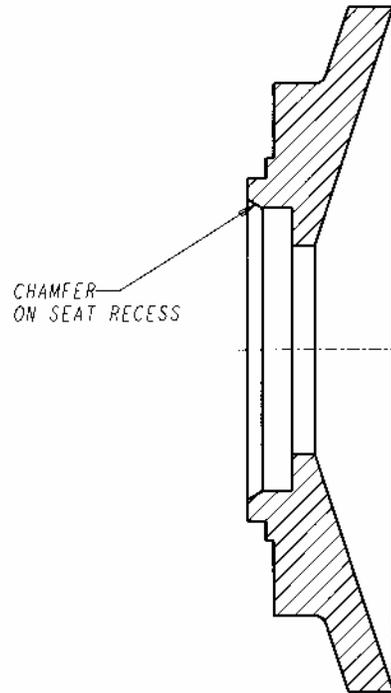


3. **Flush tank pads**

There are some Flush Tank valves out there (prior to 1979) with special cut-back pads and cut-back bodies. They are found in 2", 3" & 4" size valves. To identify one of these valves, look at the body with stem horizontal, using the stem as a centerline through the body cutting it in half, and note whether the body is symmetrical. If it is not, the valve is a cut-back style. You can also measure the width of the body on the 2" & 3" valves.

	<b>Cut-down measurement</b>	<b>Standard body</b>
<b>2"</b>	<b>2.21"</b>	<b>2.58"</b>
<b>3"</b>	<b>3.59"</b>	<b>3.72"</b>

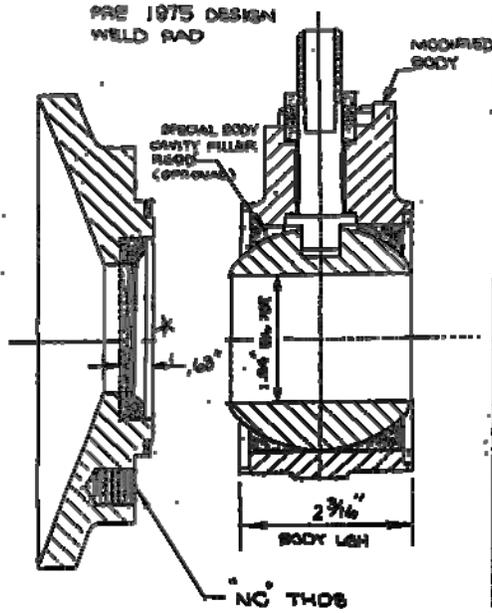
The 4" can only be identified by the pad itself, which has an angled chamfer area on the edge of the seat cavity.



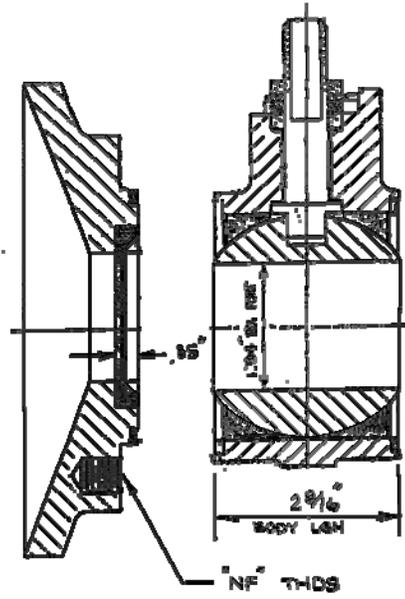
**Parts that are affected by the cut-down bodies are:**

- 2" & 3" replacement bodies and center sections. The body must be cut-back to fit up to the pad.
- 2", 3" & 4" cavity filler kits require one side of the cavity filler to be cut-back.

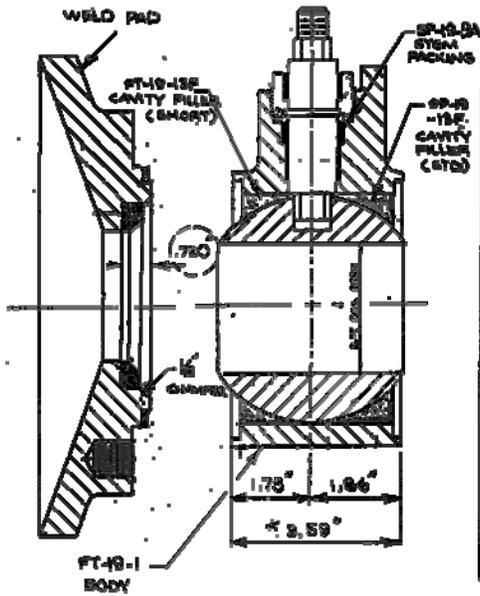
2" NEW STYLE CUT-BACK BODY WITH OLD STYLE WELD PAD



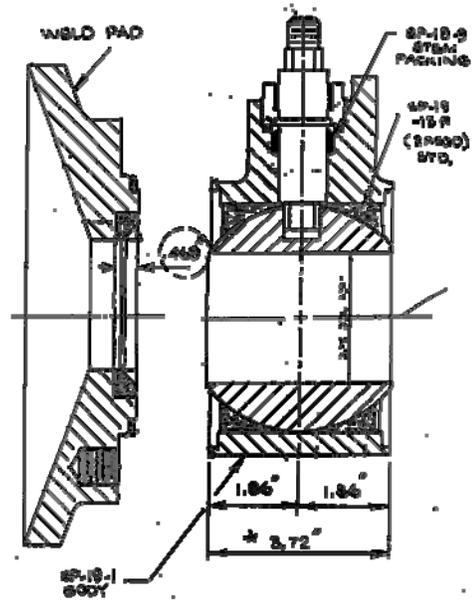
2" NEW STYLE STD BODY + PAD



OLD STYLE CUT-BACK 3" FT-19

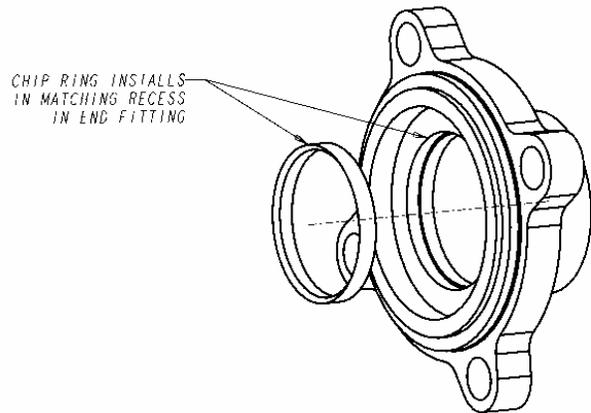


STANDARD OLD STYLE 3" FT-19 (CHANGED 1972)



#### 4. Fire Safe

There are some older series valves out there that were titled fire-safe design (not tested to any fire-safe standard) with a metal encapsulating ring on the I.D. of tank pads and end fittings. The only way to determine this series is by looking at the fittings themselves.



### Series 1 (SP, SI, CS, DP, DP, MP, MI)

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1. The stem is a double “D” shape (round in nature with 2 flats 180 degrees from each other) and is threaded all the way to the top.
2. When repairing, the stem enters the body from inside the body cavity.
3. The stem nut is a lock nut with a nylon insert in it.
4. There are Belleville spring washers (not split washers) on the stem assembly.
5. The handle is a stainless steel bent flat stock with a blue vinyl grip.

#### Revisions within Series 1

1. There are some Series 1 valves out there that were titled fire-safe design (not tested to any fire-safe standard) with a metal encapsulating ring on the I.D. of tank pads and end fittings. The only way to determine this series is by looking at the fittings themselves. (See Item 4, Fire Safe, above.)

### Series 2 (API-607 Edition 3)

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1. There is a large hex gland nut that threads down into the body holding the stem in.
2. The stem is a double “D” shape (round in nature with 2 flats 180 degrees from each other) and is threaded all the way to the top.
3. When repairing, the stem enters the body from inside the body cavity.
4. The ball will have a small hole in it in the upstream closed position.
5. The stem nut is a lock nut with a nylon insert in it.
6. There are Belleville spring washers (not split washers) on the stem assembly.
7. The handle is a stainless steel bent flat stock with a blue vinyl grip.
8. The body will have a flow indication stamped on it.
9. There will be graphite in stem area and body gasket area.

## Series 3 (API-607 Edition 4)

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1. **PBM AN (ANSI series) & AF (Angle Stem Flush Tank) only.**
2. Can be identified by looking at the stem area, if there is a (approx. ¼") flat bar plate covering the drilled body mounting pad that is bolted down then it is series 3.
3. The plate can be seen easily on a manual valve, on an actuated valve one would have to look directly below the actuator bracket.
4. There will be graphite in stem area and body gasket area

## Series 4 (SI and CS Series True-Bore™)

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1. The stem is a double "D" shape (round in nature with 2 flats 180 degrees from each other) and is threaded all the way to the top.
2. When repairing, the stem enters the body from inside the body cavity.
3. The stem nut is a lock nut with a nylon insert in it.
4. There are Belleville spring washers (not split washers) on the stem assembly.
5. The CS series 4 valves have Belleville washers on the body bolts.
6. Handle is a stainless steel bent flat stock with a blue vinyl grip.
7. The end connections will generally only be Tri-clamp and butt-weld tube end connections.
8. MI Series 4 valves:
  - a. Identified by square box configuration and a bolted bonnet on the top of the valve body
  - b. End connections are usually Tri-Clamp or Extended Butt Weld (Tube)
9. MP Series 4 valves:
  - c. Identified by square box configuration and a bolted bonnet on the top of the valve body
  - d. End connections are usually Female NPT, Butt Weld (Pipe), Socket Weld, or Flange
10. **The bore diameter through the seats and the ball will be equal to tubing I.D.**  
(See Below)

½"	=	0.37" BORE
¾"	=	0.62" BORE
1"	=	0.87" BORE
1½"	=	1.37" BORE
2"	=	1.87" BORE
2½"	=	2.37" BORE
3"	=	2.87" BORE
4"	=	3.83" BORE
6"	=	5.78" BORE

## Series 5 (S,F,D)

First introduced in the last quarter of 1999, this valve incorporates a Swing out/Lift out design for easy removal and installation

1. There is a single hinge or hinges on the body to allow swing out.
2. The seat and body gasket may have a one-piece design or a two-piece design, as follows:

Series 5 Valve Type								Seat & Gasket Assemblies	
Industrial				Sanitary				1-Piece	2-Piece
Standard	CIP/SIP	Steam	Steam w/ CIP/SIP	Standard	CIP/SIP	Steam	Steam w/ CIP/SIP		
SP, FT, DP								4	
SS, FS								4	
				SI, FI, DI				4	
	SG, FG								4
	SH, FH							4	
					SA, FA				4
		SD, FD, DD							4
		SE, FE							4
						CS, FC, DC			4
			SK, FK						4
			SL, FL						4
							SJ, FJ		4

3. Stems:
  - e. ½" & ¾" is a double "D" shape (round in nature with 2 flats 180 degrees from each other) and is threaded all the way to the top.
  - f. 1" is a double "D" shape (round in nature with 2 flats 180 degrees from each other) and has approximately a 3/8" area of unthreaded area at the top.
  - g. 1½" through 6" is a double "D" shape (round in nature with 2 flats 180 degrees from each other) and has approximately a ½" to ¾" area of unthreaded area at the top that is square.
4. When repairing, the stem enters the body from inside the body cavity.
5. There are Belleville spring washers (not split washers) on the stem assembly.
6. The handle is a stainless steel bent flat stock with a blue vinyl grip.
7. The manual valve has two (2) stem nuts, one (1) below the handle and one (1) above.

## Series 5 (SI,FI,DI,CS)

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First introduced in the last quarter of 1999, this valve incorporates a Swing out/Lift out design for easy removal and installation.

1. There is a single hinge or hinges on the body to allow swing out.
2. The seat and body gasket may have a one-piece design or a two-piece design. *(See table on page 8.)*
3. Stems:
  - a.  $\frac{1}{4}$ " through  $\frac{3}{4}$ " is a double "D" shape (round in nature with 2 flats 180 degrees from each other) and is threaded all the way to the top.
  - b. 1" is a double "D" shape (round in nature with 2 flats 180 degrees from each other) and has approximately a  $\frac{3}{8}$ " area of unthreaded area at the top.
  - c.  $1\frac{1}{2}$ " through 6" is a double "D" shape (round in nature with 2 flats 180 degrees from each other) and has approximately a  $\frac{1}{2}$ " to  $\frac{3}{4}$ " area of unthreaded area at the top that is square.
4. When repairing, the stem enters the body from inside the body cavity.
5. There are Belleville spring washers (not split washers) on the stem assembly.
6. The handle is a stainless steel bent flat stock with a blue vinyl grip.
7. The end connections will generally only be Tri-clamp and butt-well tube end connections.
8. The manual valve has two (2) stem nuts, one (1) below the handle and one (1) above.
9. **The bore diameter through the seats and the ball will be equal to tubing I.D.**  
(See Below)

$\frac{1}{2}$ "	=	0.37" BORE
$\frac{3}{4}$ "	=	0.62" BORE
1"	=	0.87" BORE
$1\frac{1}{2}$ "	=	1.37" BORE
2"	=	1.87" BORE
$2\frac{1}{2}$ "	=	2.37" BORE
3"	=	2.87" BORE
4"	=	3.83" BORE
6"	=	5.78" BORE

## Series 6 (API-607 Edition 4)

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1. Can be identified by looking at the stem area, if there is a (approx. ¼”) flat bar gland plate **between** the body drilling for the actuator mounting pad then it is series 6. The plate can be seen easily on a manual valve, on an actuated valve one would have to look directly between the actuator bracket.
2. The body bolts will be encapsulated by metal tubes.
3. Stems:
  - a. ½” & ¾” is a double “D” shape (round in nature with 2 flats 180 degrees from each other) and is threaded all the way to the top.
  - b. 1” is a double “D” shape (round in nature with 2 flats 180 degrees from each other) and has approximately a 3/8” area of unthreaded area at the top.
  - c. 1½” through 6” is a double “D” shape (round in nature with 2 flats 180 degrees from each other) and has approximately a ½” to 1” area of unthreaded area at the top that is square.
4. The manual valve has two (2) stem nuts, one (1) below the handle and one (1) above.

## Series 8 forged and Series 9 cast

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1. Series 8 forged product can be identified by the letters “HF” stamped into the body, end fitting, and on the stainless tag attached to the valve. A typical body number for a 1-inch valve would be SI**HF**E801. A 1-inch end would have a part number SI**HF**E803X- for a clamp end and SI**HF**E803F- for an extended butt weld tube end fitting. The part number on the stainless tag for a 1-inch would be SI**HF**E8X-G for a manual valve with clamp ends. The forged product has a unique appearance in contrast to cast product.
2. Series 9 cast product is identical to the Series 8 forged with exception of a cast body and end fittings. The Series 9 product can be identified by the number “9” cast into the body and end connections - sometimes “Series 9” appears in full.
3. Series 8 and 9 are only sanitary true-bore® products, so end connections are limited to clamp, extended butt weld for tube, and compression for tube ends.