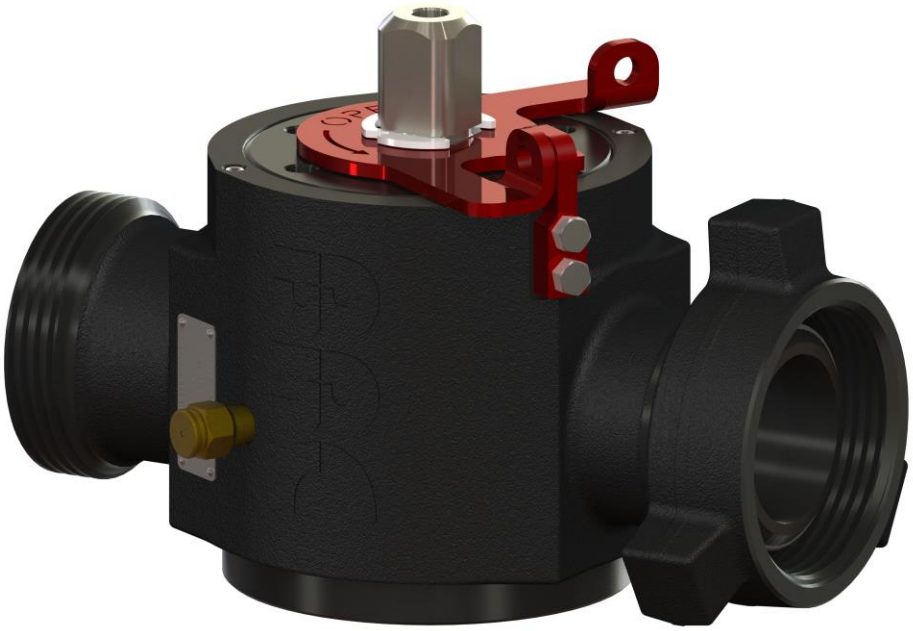
3” Fig. 206 Plug Valve
User Manual



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1-844-316-0630

1) Overview

BRC Engineering 3” Fig. 206 plug valve is a straight pocket, quarter turn plug valve designed to meet the harsh demands of the oil and gas industry.

Temperature & Service Class:

2,000 psi Sour Service: LU–DD-NL-PSL1-PR1
-46°C to 121°C, Sour Service (Carbon or Low Alloy Steel, NACE MR0175, No H2S Limit), Product Specification Level 1 (unless otherwise specified by the customer), Performance Rating 1.

All components are engineered and manufactured according to API 6A PSL1/PR1 and sour service trim levels also meet NACE MR0175. BRC Engineering takes pride in manufacturing the highest quality flow control products with industry leading performance and wear resistance. Contact BRC Engineering for a complete listing of current flow control products.

2) Safety

BRC Engineering cannot anticipate every environment where these products will be used, therefore the user MUST be aware of, and adhere to, all applicable industry standards/regulations on the safe installation and use of these products. Failure to follow these general guidelines can result in serious injury or death.

- **DO NOT EXCEED THE STATED MAXIMUM COLD WORKING PRESSURE (MCWP)!**
- Do not mix, interchange or assemble components and connections with different pressure ratings. Mismatched parts can fail under pressure.
- Do not use or substitute non-BRC components or parts in BRC products and assemblies.
- Do not operate above or below the working temperature rating of the product.
- Do not attempt to tighten or loosen pressurized connections.
- Make certain that personnel and facilities are protected from residual hazardous fluids before disassembly of any product.
- Proper make-up of connections is required to attain rated working pressure.
- Do not use heavily worn, corroded or eroded products. Contact BRC for information on how to determine safe wear limits.
- If any leaks are detected from BRC products, immediately remove them from service to prevent damage and personal injury.
- Use only appropriate product and materials for the intended service. Do not expose standard service materials to sour gas (see NACE MR0175). Do not interchange sour gas with standard service components.
- When working in freezing temperatures use appropriate precautions with ferrous products. Freezing temperatures lower the impact strength of ferrous materials.
- Be sure to closely follow manufacturer’s instructions and Material Safety Data Sheets when working with solvents.

For questions regarding the safe usage and applications, please contact BRC Engineering 1-844-316-0630.

3) Assembly Procedure

NOTE:

- **It is imperative that valve assembly workstation is clean and free of anything that could contaminate the grease such as metal shavings, dirt, rust, old paint, etc. Do not sand or deburr near workstation!**
- **Refer to Appendix A for exploded assembly drawings with detailed BOMs.**

Step 1: Part Inspection
Check all parts for cleanliness. Parts must be free from machining coolant, cutting fluids and oil. Failure to do so could limit high pressure sealing performance. Check surfaces around the valve top port bore for sharp edges that could damage O-rings and seals. Ensure top port bore is free from scratches, dents or dings.

Step 2: Dowel Pin Installation
Insert dowel pins into the holes located directly below the ports in the valve body bore. Lightly tap down with a hammer and flat ended punch until the pin is seated. To ensure proper clearance with the seats, measure the protrusion height of the dowel pin. The acceptable pin protrusion range is between 0.16 and 0.22 inches.

Step 4: Dust Seal Installation
Push one of two shaft wiper seals into groove at bottom of valve body with lip facing toward outside of valve.

Step 5: Seat Preparation
Ensure surfaces of seats are free from scratches or dents. Ccoat seats with Val-Tex 1502 assembly grease. Push window seals into grooves on window seat and place seats into valve body. Ensure that dowel pins are engaged into seat pin notches.

Step 6: Seat and Seat Spacer Installation
Lightly coat seat spacers with valve grease and slide seat spacers between the seats leaving them an inch above the top of the valve body. This will aid in ease of plug installation.

Step 7: Plug Preparation
Ensure that the seat mating surface of plug is free from scratches, dents or dings. Lightly grease the plug seat mating diameter with Val-Tex 1502 assembly grease. Install plug O-rings onto nylon radial backup rings and liberally apply valve grease. Install one set onto the top and set one onto the bottom of plug.

Step 8: Plug Installation
Slide plug between seat spacers and seats. Use arbor press (or use a strap wrapped around male neck and a long block of wood) to gently and evenly push plug down between the seats and seat spacers. Make sure seats and seat spacers are fully bottomed once the plug is installed.

Step 9: Top Cap Installation
Install O-ring into top cap O-ring groove. Push shaft wiper seal into small internal groove with lip facing outward. Generously apply valve grease to O-ring. Apply anti-seize compound to top cap threads. Thread top cap into valve body and tighten with pin wrench.

Step 10: Grease Fitting Installation
Apply thread sealant and thread tape to two button head grease fittings and install into valve body. Tighten with a hand wrench (2-3 turns passed hand tight).

Step 11: Hammer Union Installation
Install retaining ring onto valve body male neck. Slide the hammer nut onto male neck. Insert three slip segments into hammer nut with retaining ring grooves exposed on backside of nut. Install retaining ring into segmented slip grooves

Step 12: Indicator and Stop Installation
Fasten indicator stop to valve body with two hex bolts. Use wrench to turn plug to the fully open position making sure the bore of the plug and valve body are aligned. Install indicator onto plug stem with pointer facing towards wing nut end. Install external retaining ring onto stem to fix indicator in place. Close and open valve to ensure smooth operation.

Step 13: Greasing
Using a high pressure grease gun, apply grease through each grease fitting with the valve in the open position. Grease until pressure stabilizes (up to 2,000 psi). Actuate and re-grease several more times. If safe to do so, visually inspect the cross port during greasing to ensure that grease has extruded around each seal. Remove any excess grease that extruded into cross port of valve.

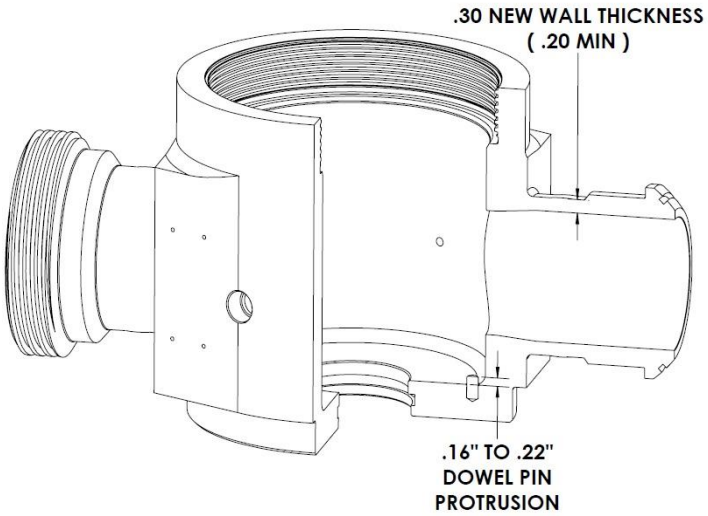
BRC Engineering suggests the following greases:

High temperature service: Val-Tex #972
Low temp service: Val-Tex #750

4) Disassembly/Repair Procedure

It is considered good practice to disassemble and thoroughly clean all parts in an area separate from your valve assembly area. **Keep your assembly area clean!** To disassemble the plug valve for inspection or installation of a repair kit:

1. Remove stem retaining ring and indicator.
2. Remove top cap with pin wrench.
3. Pull plug from valve body by hand. This can be made easier by gently turning plug back and forth with a wrench.
4. Remove seat spacers and seats.
5. Thoroughly clean and inspect all sealing surfaces in valve body, seats and plug for dings, scratches and erosion. See image below for valve body wear limits.
6. Thoroughly clean and inspect seals and O-rings for extrusion and erosion.
7. All scratches and dings in parts should be lightly sanded with 600 grit sand paper and cleaned afterwards. **Do this away from your assembly area.**
8. Install a major or minor repair kit or re-install parts using the assembly procedure previously listed in manual.



Dowel Pin Height and Wear Limit

5) Maintenance

Valves should be greased every 5 actuations or before and after every job, whichever comes first. A strict greasing policy will ensure valve performance and extend required service intervals. **Lack of grease in valves is the major cause of:**

- Leaking valves
- Hard actuation
- Scarred internals
- Corroded surfaces

Note: Specific applications may require more greasing based on actual experience with the products in actual operating environments. For instance, abrasive flow streams, high temperatures, high flow rates, corrosive flow streams, and fluid streams that act as solvents will wash away valve grease and require more frequent greasing regimen than operations where these conditions are not present.

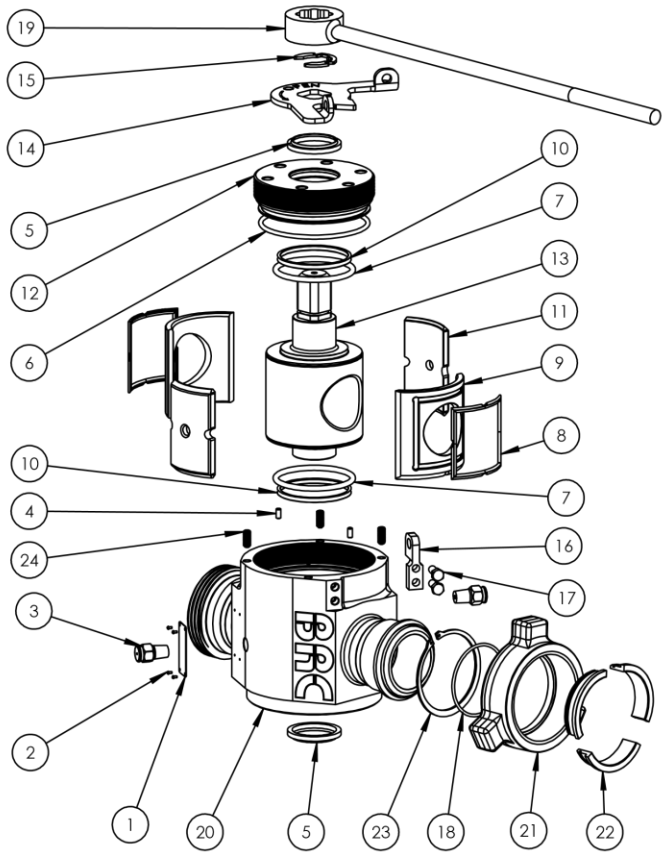
6) Storage

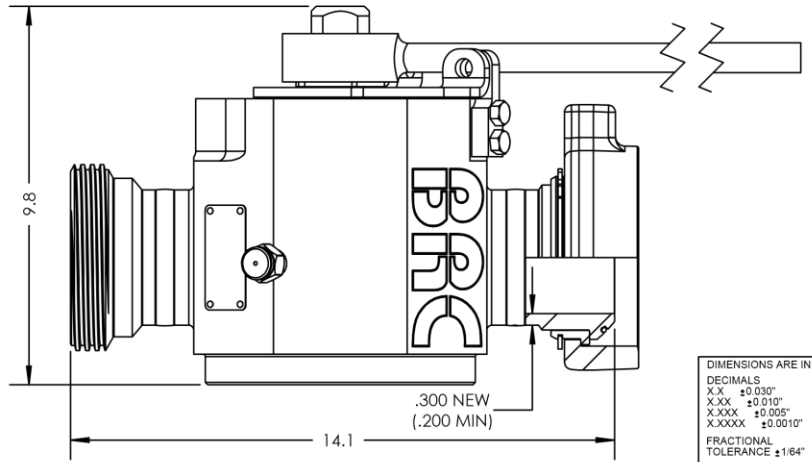
Recommended shelf life storage:
0 to 6 months – nothing required
6 to 12 months – re-grease and actuate plug. Making sure that operation is smooth and free of grinding or scraping.
12 or more months – Disassemble, clean, rebuild and test.
Replace all seals.

After use:
Equipment should be disassembled and cleaned after each use to ensure a long life. Corrosive products left in a valve will greatly reduce the life of the valve.

ITEM	PART NUMBER	DESCRIPTION	Assy Qty	Major Kit Qty 100-06-00R	Minor Kit Qty 100-06-00S
1	100-03-031	Fitting Identification Tag	1	-	-
2	100-00-017	No. 2-100 x 0.1875in U-Drive Screw	4	-	-
3	100-00-055	Giant Button-Head Grease Fitting - 0.375in NPT	2	2	-
4	100-00-059	1/4" x 1/2" Dowel Pin	2	2	-
5	100-00-060	Shaft Wiper U-Type 2.25in	2	2	2
6	100-00-062	O-Ring -356	1	1	1
7	100-00-064	O-Ring -419	2	2	2
8	100-04-014	3" Fig 1502 Plug Valve Seat Window Seal	2	2	2
9	100-04-015	3" Fig 1502 Plug Valve Window Seat	2	2	-
10	100-04-017	3" Plug Valve Radial Backup Ring	2	2	2
11	100-04-019	3" Fig 1502 Seat Spacer	2	2	-
12	100-06-002	3" Fig 206 Plug Valve Top Nut	1	-	-
13	100-06-003	3in Fig 206 Plug	1	1	-
14	100-06-004	3" Fig 206 Plug Valve Indicator	1	-	-
15	100-00-091	1.75" Ext. Ret. Ring, Style 2	1	-	-
16	100-06-009	3" Fig 206 Plug Valve Lockout Tab	1	-	-
17	100-00-092	0.375-16 x 1.0in - Hex Bolt	2	-	-
18	100-00-069	-237 O-Ring	1	1	1
19	100-06-008	3" Fig 206 Plug Valve Stem Wrench	1	-	-
20	100-06-001	3" Fig 206 BW Plug Valve Body - Billet	1	-	-
21	100-06-206W-B	3 Inch Fig 206 Union Nut	1	-	-
22	100-06-005	3" Fig 206 Segmented Slip	3	-	-
23	100-00-093	4-1/4" External Retaining Ring	1	-	-
24	100-00-105	SHSS 0.375-16 x 0.875in	4	-	-

NOTES:
1) MEETS REQUIREMENTS OF API6A PSL1/PR1
2) 2,000 PSI MAX CWP
2) TEMPERATURE CLASS LU (-46°C[-50°F] TO 121°C[250°F])
3) MATERIAL CLASS DD (SOUR SERVICE)
4) 48 kg [105 lb] ASSEMBLED WEIGHT





DIMENSIONS ARE IN INCHES, ANGLES ARE IN DEGREES
DECIMALS X.X ±0.030" X.XX ±0.010" X.XXX ±0.005" X.XXXX ±0.0010"
FRACTIONAL TOLERANCE ±1/64"
SURFACE FINISH √ 63µin.
UNSPECIFIED CHAMFERS & FILLET RADII = 0.010"
REMOVE ALL BURRS AND SHARP EDGES
∠ = ±0.001" / IN.
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○ = ±0.001" / IN. Ø
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APPROVAL

BRC ENGINEERING

BRC Engineering

3in Fig 206 Plug Valve 2k Sour

MATERIAL: Refer to part drawings

WEIGHT: 48 kg (105 lbs) | DWG. NO.: 100-06-011 | REV: 0 | SHEET 1 of 1

ECR	REV	REVISION DESCRIPTION	DATE	BY
-	0	INITIAL RELEASE.	2017-03-08	SB

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1	100-03-031	Fitting Identification Tag	1	-	-
2	100-00-017	No. 2-100 x 0.1875in U-Drive Screw	4	-	-
3	100-00-044	3/8" Lock Washer	4	-	-
4	100-00-055	Giant Button-Head Grease Fitting - 0.375in NPT	2	2	-
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15	100-04-019	3" Fig 1502 Seat Spacer	2	2	-
16	100-06-002	3" Fig 206 Plug Valve Top Nut	1	-	-
17	100-06-003	3in Fig 206 Plug	1	1	-
18	100-06-022	Shaft Adapter for 27mm Socket Actuator	1	-	-
19	100-06-023	Actuator Mount for Meridian AC-140	1	-	-
20	-	Meridian AC-140 Actuator	1	-	-
21	100-06-001	3" Fig 206 BW Plug Valve Body - Billet	1	-	-
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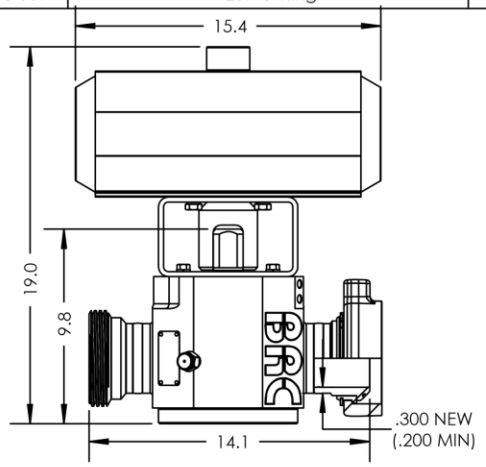
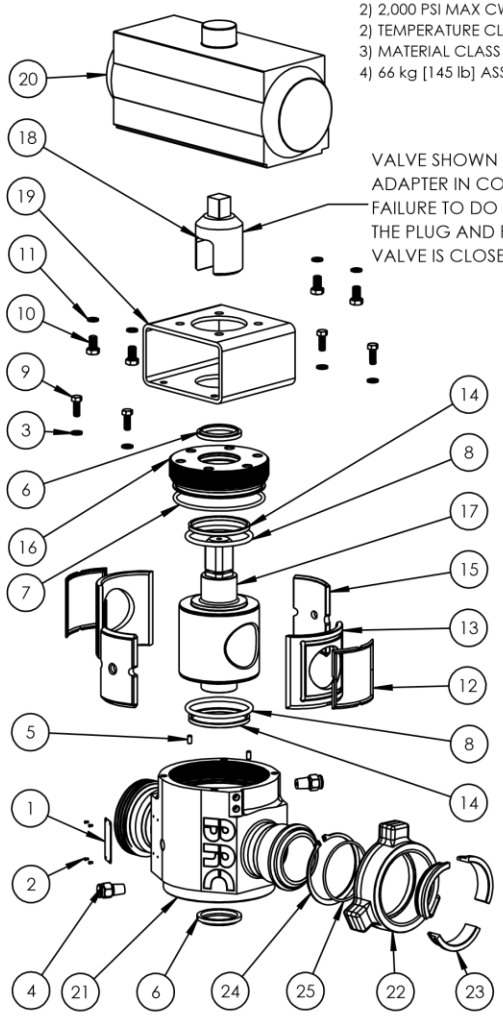
3) MATERIAL CLASS DD (SOUR SERVICE)
4) 66 kg [145 lb] ASSEMBLED WEIGHT

VALVE SHOWN IN OPEN POSITION. INSTALL ADAPTER IN CORRECT ORIENTATION AS SHOWN. FAILURE TO DO SO MAY CAUSE RESTRICTION TO THE PLUG AND PREVENT SEALING WHEN THE VALVE IS CLOSED.





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APPROVAL

BRC ENGINEERING

BRC Engineering
Plug Valve Assembly
3" Fig 206 w/ AC140 Actuator
MATERIAL Refer to Part Drawings

WEIGHT	DWG. NO.	REV	SHEET 1 of 1
66 kg (145 lbs)	100-06-011A	0	