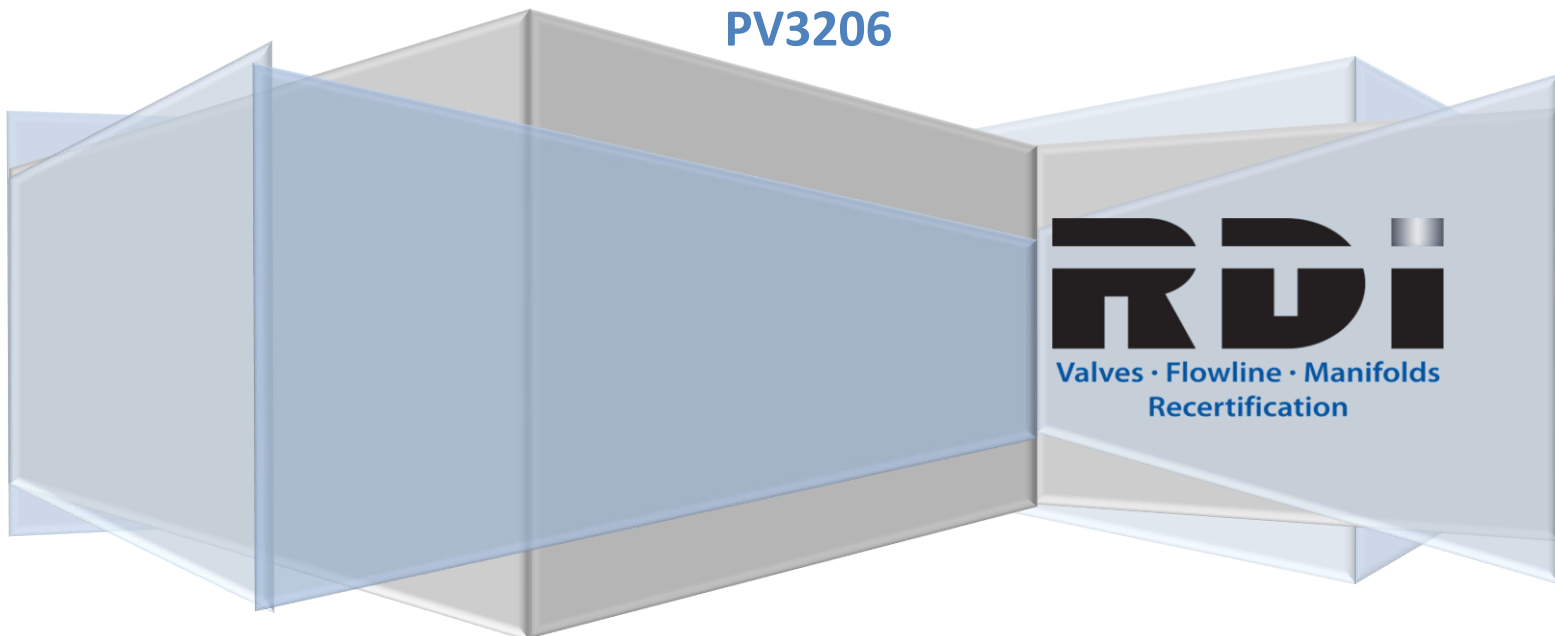


# Red Deer Ironworks



## 3" Plug Valve Maintenance Manual

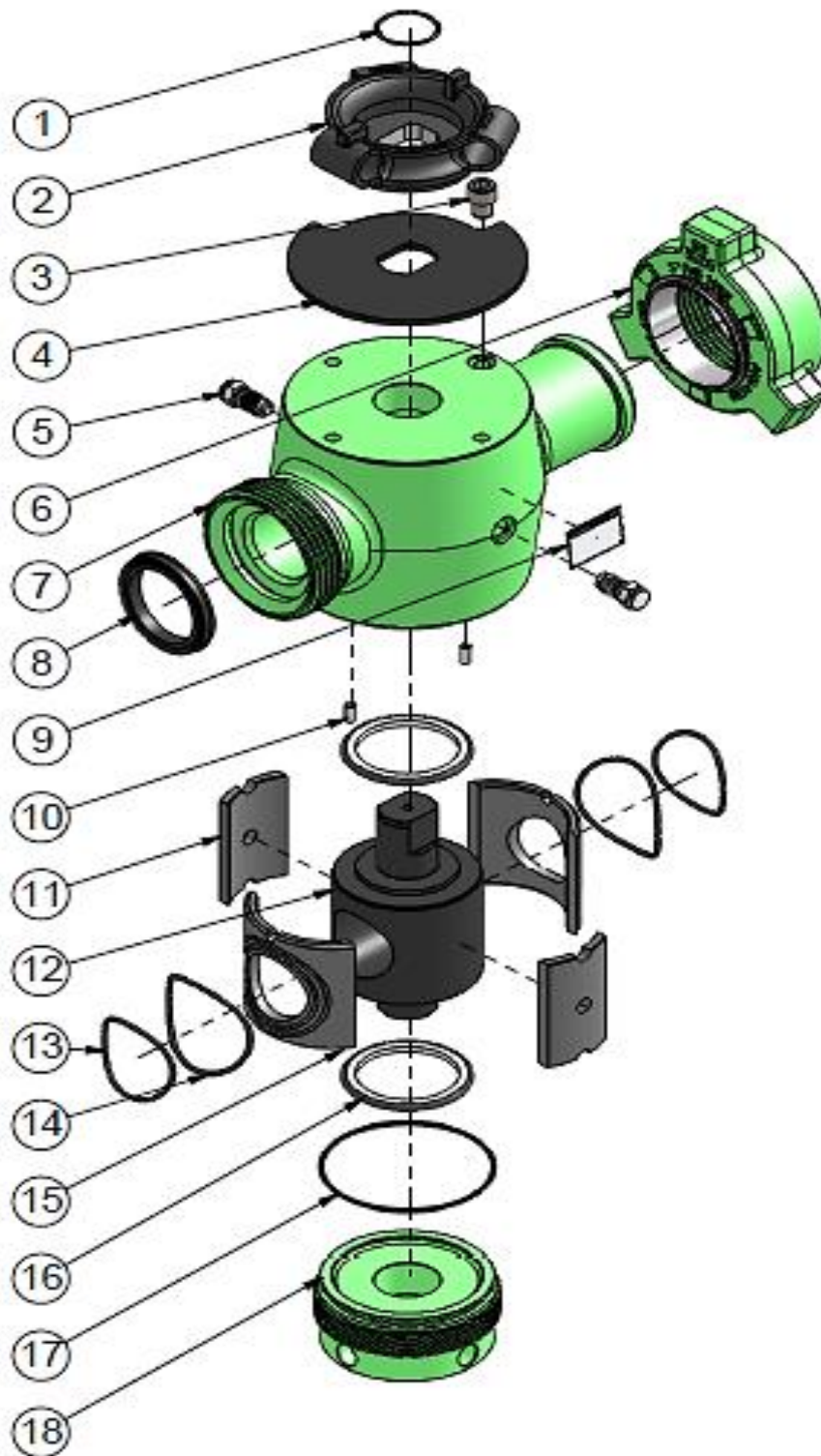
Parts Covered: PV31502, PV31502STD,  
PV31502STD/ACID, PV3602,  
PV3206



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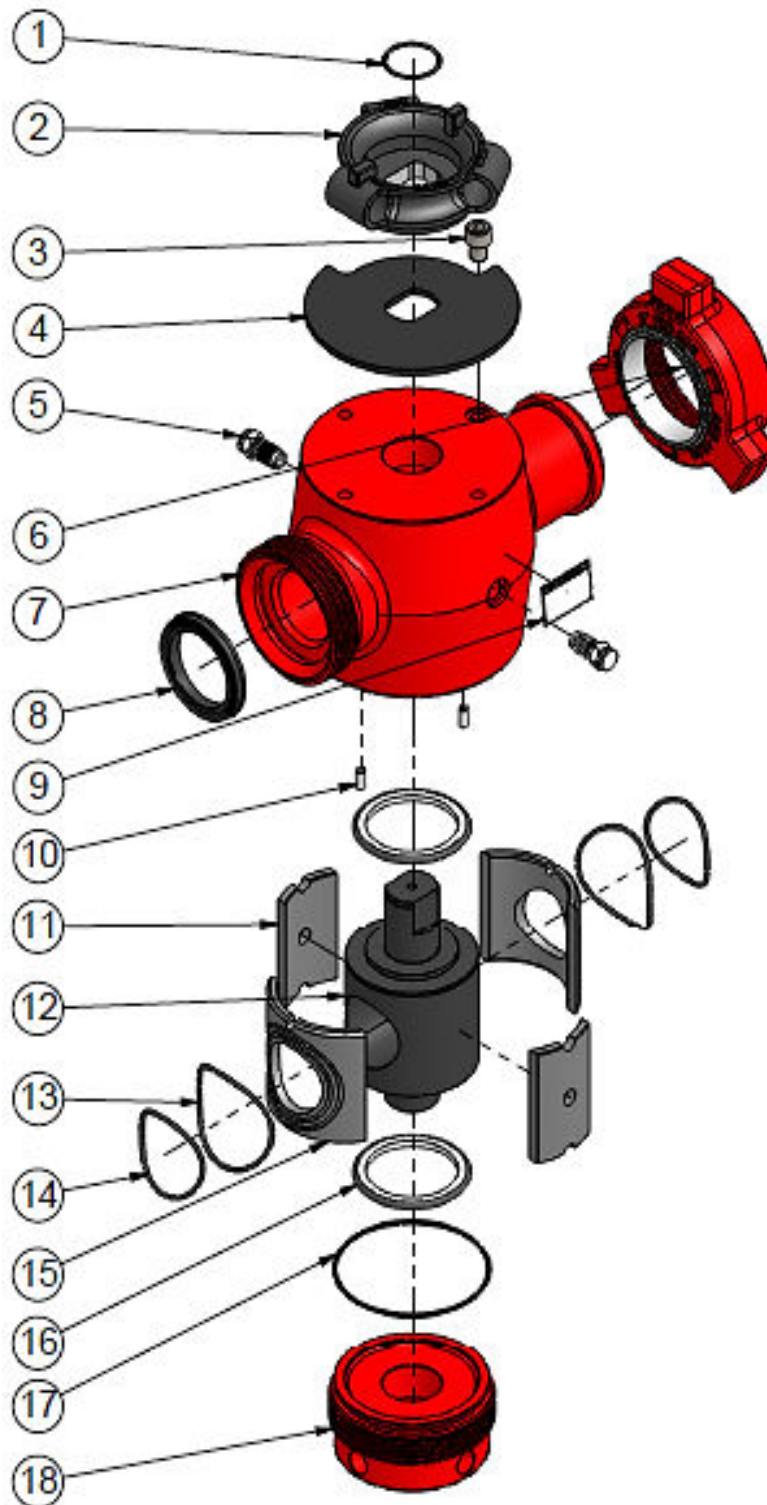
## Exploded View - 3" 1502 Plug Valve



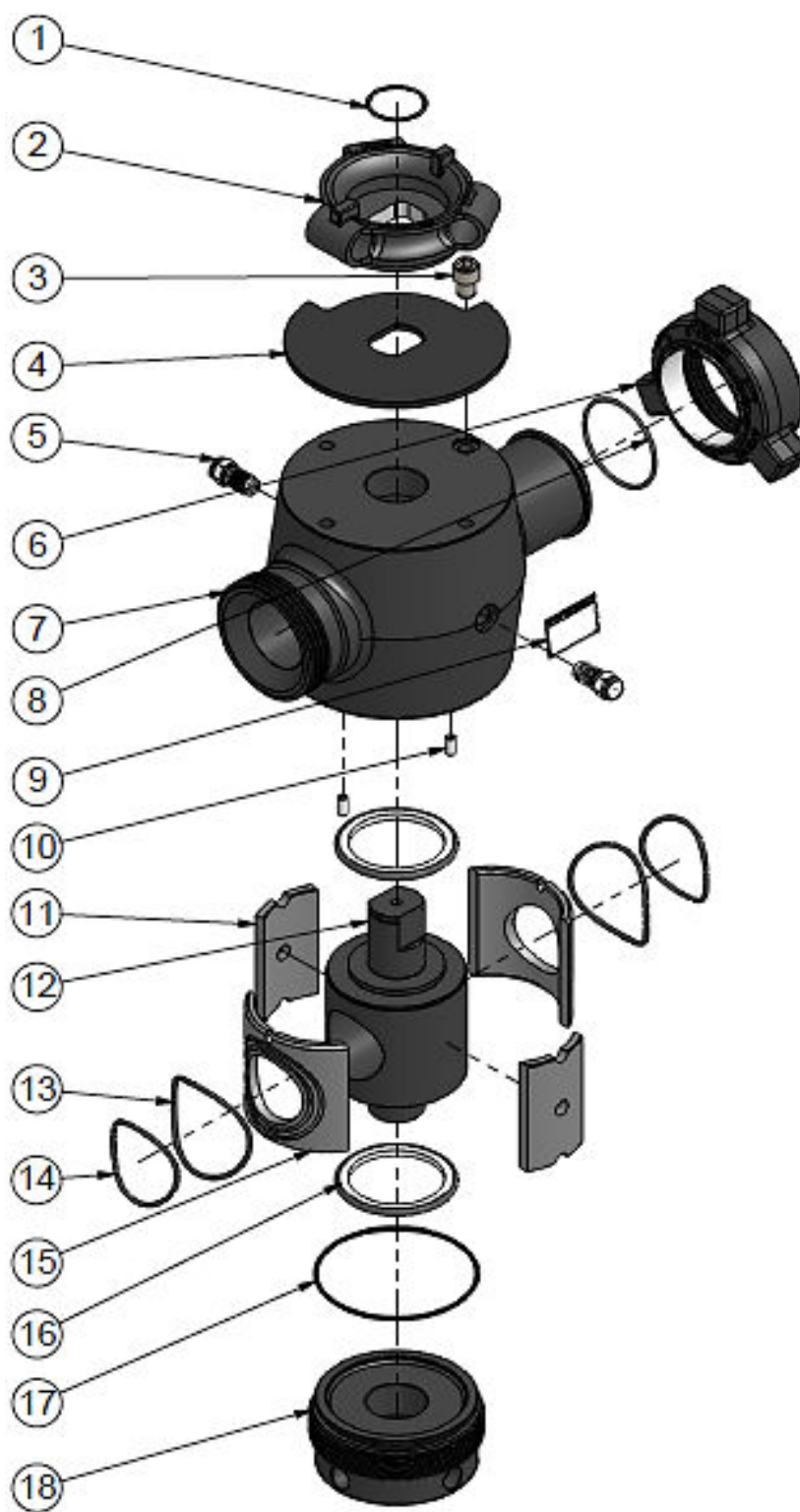
## Parts Listing - 3" 1502 Plug Valve

Item	Qty	Description	Part # Sour (H <sub>2</sub> S)	Part # Standard	Part # STD/ACID
1	1	Spiral Retaining Ring	SNAPRINGRS200	SNAPRINGRS200	SNAPRINGRS200
2	1	Plug Valve Handle	PV3HANDLE	PV3HANDLE	PV3HANDLE
3	1	Cap Screw, Socket Head, Hex, 5/8-11 x 3/4 x 3/4 Thread Length	SHCS 0.625-11x0.75x0.75-N	SHCS 0.625-11x0.75x0.75-N	SHCS 0.625-11x0.75x0.75-N
4	1	Stop Plate Body	PV3HDLSTOP	PV3HDLSTOP	PV3HDLSTOP
5	2	3/4" - 16 TPI Giant Button Head Grease Fitting (GBH-BT)	SH-016	SH-016	SH-016
6	1	Wingnut Kit	WNKIT31502 (see page 9)	WNKIT31502STD (see page 9)	WNKIT31502STD (see page 9)
7	1	Plug Valve Body	PV31502	PV31502STD	PV31502STD
8	1	Union Seal - 3in	SEAL3	SEAL3STD	SEAL315BUBR
9	1	Name Plate	VLVTAG	VLVTAG	VLVTAG
10	2	Grooved Pin - 0.3125in DIA x 0.75in Long	PV3PIN	PV3PIN	PV3PIN
11	2	Seat Carrier Spacer	PV3SPACERGLASSPHENOLIC	PV3SPACERGLASSPHENOLIC	PV3SPACERGLASSPHENOLIC
12	1	Plug Body	PV3FINPLUG	PV3FINPLUG	PV3FINPLUG
13	2	O-Ring 4mm x 78mm	OR-H80-40078	OR-H80-40078	OR-V75-40078
14	2	O-Ring 4mm x 96mm	OR-H80-40096	OR-H80-40096	OR-V75-40096
15	2	Seat Carrier	PV3FINSEATCARR	PV3FINSEATCARR	PV3FINSEATCARR
16	2	Plug Seal (3" Plug)	PV3PLUGSEALS	PV3PLUGSEALS	PV3PLUGSEALSA
17	1	O-Ring 253	OR-H90-253	OR-H90-253	OR-V75-253
18	1	Cap Body	PV36BODCAP	PV36BODCAPSTD	PV36BODCAPSTD

## Exploded View - 3" 602 Plug Valve



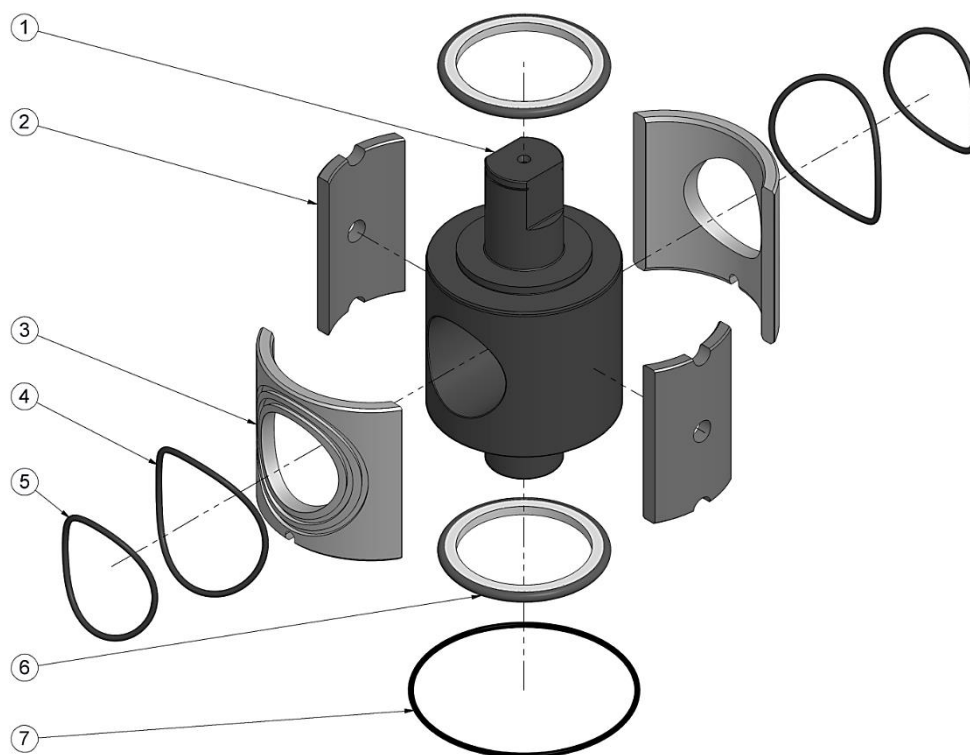
## Exploded View - 3" 206 Plug Valve



## Parts Listing - 3" 602 & 3" 206 Plug Valves

Item	Qty	Description	Part # PV3602	Part # PV3206
1	1	Spiral Retaining Ring	SNAPRINGRS200	SNAPRINGRS200
2	1	Plug Valve Handle	PV3HANDLE	PV3HANDLE
3	1	Cap Screw, Socket Head, Hex, 5/8-11 x 3/4 x 3/4 Thread Length	SHCS 0.625-11x0.75x0.75-N	SHCS 0.625-11x0.75x0.75-N
4	1	Stop Plate Body	PV3HDLSTOP	PV3HDLSTOP
5	2	3/4" - 16 TPI Giant Button Head Grease Fitting (GBH-BT)	SH-016	SH-016
6	1	Wingnut Kit	WNKIT3602 (see pg.10)	WNKIT3206 (see pg.10)
7	1	Plug Valve Body	PV3602	PV3206
8	1	Union Seal / O-Ring	SEAL3	OR-H80-236
9	1	Name Plate	VLVTAG	VLVTAG
10	2	Grooved Pin - 0.3125in DIA x 0.75in Long	PV3PIN	PV3PIN
11	2	Seat Carrier Spacer	PV3SPACERGLASSPHENOLIC	PV3SPACERGLASSPHENOLIC
12	1	Plug Body	PV3FINPLUG	PV3FINPLUG
13	2	O-Ring 4mm x 96mm	OR-H80-40096	OR-H80-40096
14	2	O-Ring 4mm x 78mm	OR-H80-40078	OR-H80-40078
15	2	Seat Carrier	PV3FINSEATCARR	PV3FINSEATCARR
16	2	Plug Seal (3" Plug)	PV3PLUGSEALS	PV3PLUGSEALS
17	1	O-Ring 253	OR-H90-253	OR-H90-253
18	1	Cap Body	PV36BODCAP	PV36BODCAP

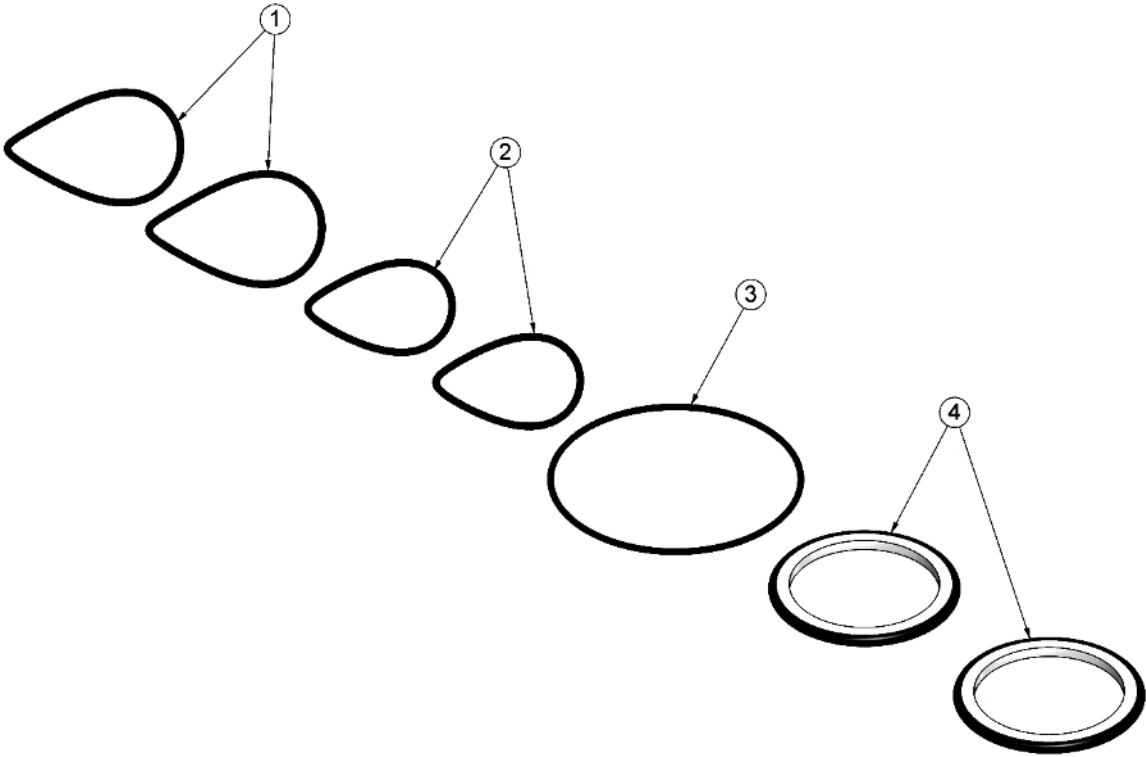
## Major Repair Kit Parts Listing - 3" 1502, 3" 1502STD, 3" 1502STD/ACID, 3" 602 & 3" 206 Plug Valves



Item	Qty	Description	Part # Sour (H <sub>2</sub> S) and Standard PV31502, PV31502STD, PV3602, PV3206	Part # STD/ACID PV31502STD/ACID
		<b>Major Repair Kit</b>	<b>PVRK3MAJ</b>	<b>PVRK315MAJA</b>
1	1	Plug Body	PV3FINPLUG	PV3FINPLUG
2	2	Seat Carrier Spacer	PV3SPACERGLASSPHENOLIC	PV3SPACERGLASSPHENOLIC
3	2	Seat Carrier	PV3FINSEATCARR	PV3FINSEATCARR
4	2	O-Ring 4mm x 96mm	OR-H80-40096	OR-V75-40096
5	2	O-Ring 4mm x 78mm	OR-H80-40078	OR-V75-40078
6	2	Plug Seal (3" Plug)	PV3PLUGSEALS	PV3PLUGSEALSA
7	1	O-Ring 253	OR-H90-253	OR-V75-253

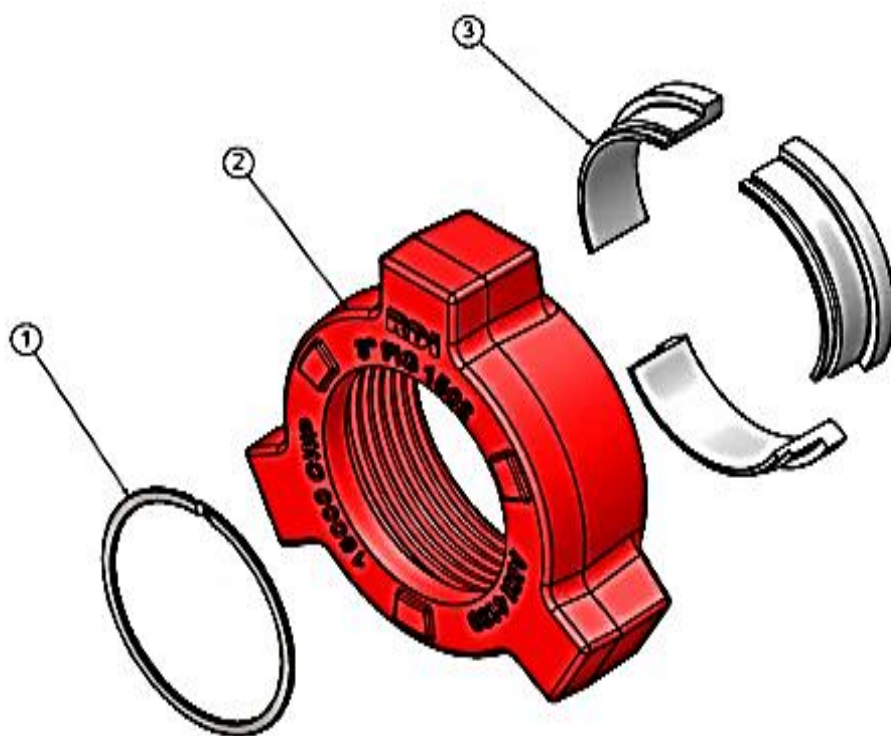


# **Minor Repair Kit Parts Listing - 3" 1502, 3" 1502STD, 3" 1502STD/ACID, 3" 602 & 3" 206 Plug Valves**



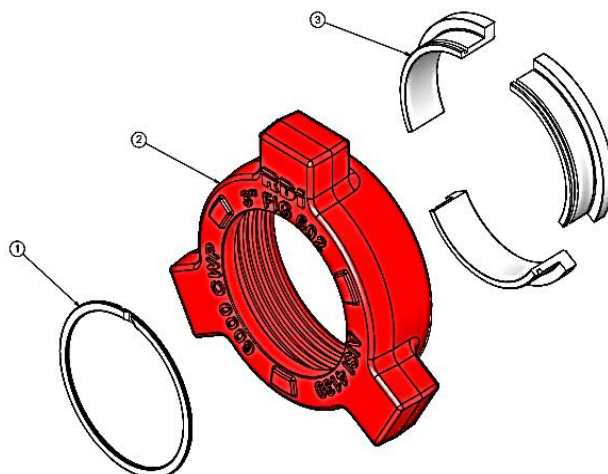
			Part # Sour (H <sub>2</sub> S) and Standard PV31502, PV31502STD, PV3602, PV3206	Part # STD/ACID PV31502STD/ACID
Item	Qty	Description		
		<b>Minor Repair Kit</b>	<b>PVRK3MIN</b>	<b>PVRK215MINA</b>
1	2	O-Ring 4mm x 96mm	OR-H80-40096	OR-V75-40096
2	2	O-Ring 4mm x 78mm	OR-H80-40078	OR-V75-40078
3	1	O-Ring 253	OR-H90-253	OR-V75-253
4	2	Plug Seal (3" Plug)	PV3PLUGSEALS	PV3PLUGSEALSA

## Wingnut Kit Parts Listing - 3" 1502



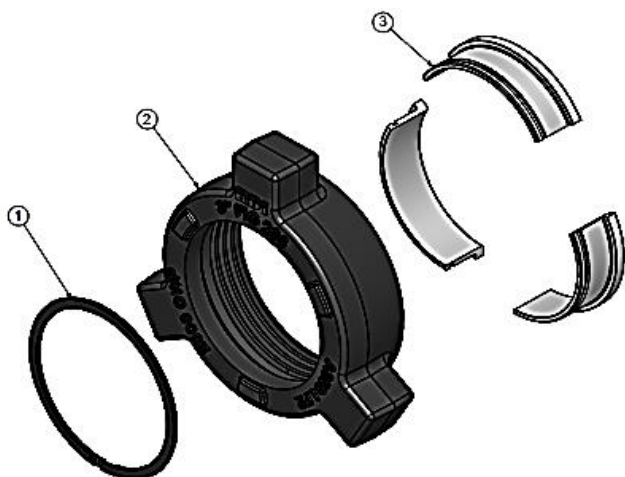
Item	Qty	Description	Part # Sour (H <sub>2</sub> S)	Part # Standard and STD/ACID
		<b>Wingnut Kit</b>	<b>WNKIT31502</b>	<b>WNKIT31502STD</b>
6.1	1	Spiral Retaining Ring	SNAPRINGWST450	SNAPRINGWST450
6.2	1	Wingnut	WN31502	WN315DETSTD
6.3	1	Segment Set (3)	SEG31502	SEG31502 Rev.8 Or Newer

## Wingnut Kit Parts Listing - 3" 602



Item	Qty	Description	Part # Sour (H <sub>2</sub> S)
		<b>Wingnut Kit</b>	<b>WNKIT3602</b>
6.1	1	Spiral Retaining Ring	SNAPRINGWST450
6.2	1	Wingnut	WN3602
6.3	1	Segment Set (3)	SEG3602

## Wingnut Kit Parts Listing - 3" 206



Item	Qty	Description	Part # Sour (H <sub>2</sub> S)
		<b>Wingnut Kit</b>	<b>WNKIT3206</b>
6.1	1	Spiral Retaining Ring	SNAPRINGWST425
6.2	1	Wingnut	WN3206
6.3	1	Segment Set (3)	SEG3206

## Assembly Procedure

### Pictorial – 3" 1502 Plug Valve

It is important that the workstation is clean and free of any contaminants such as metal shavings, dirt, etc. Do not sand or de-burr any items while at the assembly workstation.

**Note:** RDI-6430 (assembly grease), RDI-2015 (performance grease) and Nikal (anti-seize compound) are used in this procedure. Use of grease other than that listed in this manual is not recommended as it may adversely affect the performance and functionality of the Plug Valve.

1. Clean and inspect all parts for any damage (i.e. dents, scratches, sharp edges and burrs), particularly on the sealing areas and threads prior to assembly.



2. Install the **Spiral Retaining Ring (#6.1)** onto the male end of the **Plug Valve (PV) Body (#7)**.

Refer to page 9 for **Wingnut Kit Parts Listing**.



3. Slide the **Wingnut (#6.2)** onto the male end up to the **Spiral Retaining Ring**. Place the **Segment Set (3) (#6.3)** around the male end and pull the **Wingnut** over the **Segments** to hold them in place.

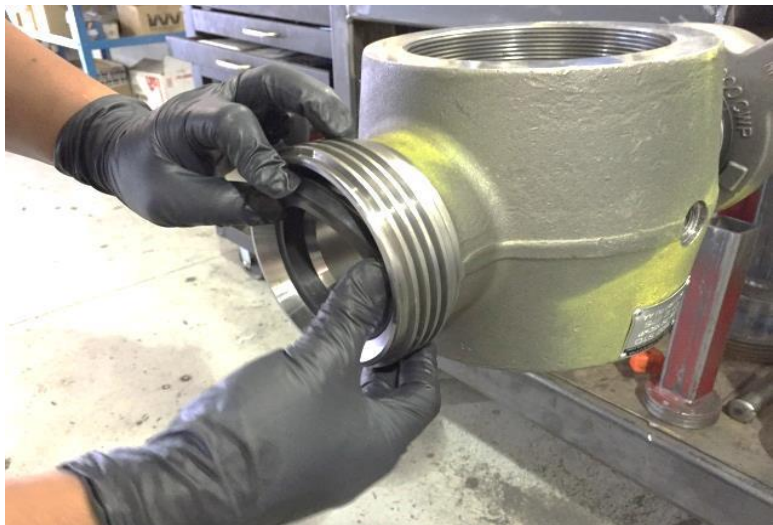


4. Pry the **Spiral Retaining Ring** around into the groove of the **Segments** to secure the **Wingnut**.



5. Insert the **Union Seal (#8)** into the groove at the female end of the **PV Body**.

Note: For **3" 206 Plug Valve - OR-236 (#8)** is used instead of a **Union Seal** and is installed into the groove at the **male end** of the **PV Body**.





Mount the **Plug Valve Body** on a bench receiver.



6. Insert the two (2) **Grooved Pins (#10)** into the pin holes in the bottom of the **PV Body**.

**Note:** Insert **Pins** small end first.



7. Punch the two (2) **Grooved Pins** using a flat head punch until fully engaged.

Use an air nozzle to blow out the inside of the **Valve** to remove any contaminants.



8. Coat **O-Rings (#13 & #14)** with **assembly grease** then install them into the grooves of the **Seat Carriers (#15)** respectively.



9. **Grease** the sealing surface of the **Seat Carriers**.



10. **Grease** the internal wall of the **PV Body**. Place the **Seat Carriers** upright flush against the wall with the notch facing down and engaged onto the **Grooved Pins**.





11. **Grease** both sides of the **Seat Carrier Spacers (#11)** then insert them between the **Seat Carriers** flush to the wall of the **PV Body**.



12. With the longer shaft of the **Plug Body (#12)** facing up, **grease** the upper sealing surface then install the first **Plug Seal (#16)**.



13. Apply a liberal amount of **assembly grease** on the **Plug Body** including the **Plug Seal** that was just installed.





14. Turn the **Plug Body** upside down and press the **Plug Body** between the **Seat Carriers** by applying downward pressure until fully engaged.



15. Coat the second **Plug Seal** with **grease** then install on the **Plug Body**.



16. Coat **O-Ring (#17)** with **grease** then install into the groove of the **Cap Body (#18)**.

**Note:** Ensure the **O-Ring** is flush around the groove.



17. **Grease** the sealing surface of the **Cap Body**. Apply **anti-seize compound** on the threads of the **Cap Body** and the corresponding threads of the **PV Body**.



18. Install the **Cap Body** to the **PV Body**. Tighten **clockwise** till snug.



19. Turn the **PV Body** upside down. Apply **anti-seize compound** on the threads of the two (2) **Button Grease Fittings (#5)** then thread them into the sides of the **PV Body** and tighten them snugly.





20. Apply **anti-seize compound** on the threads of the **Socket Head Cap Screw (#3)** then thread it into the top of the **PV Body** on the male side and tighten it snugly.



21. In the open position (**Plug Bore** aligned with **Valve Bore**), slide the **Stop Plate Body (#4)** onto the **Plug Body** with the orientation as shown. This will ensure that the position of the **Plug** (open or closed) correlates to the arrow on the **Valve Handle**.

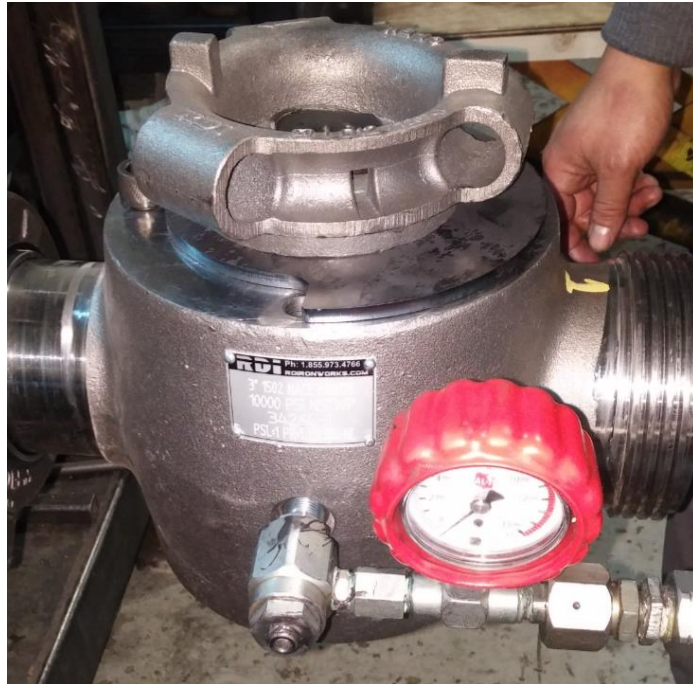


22. Install the **PV Handle (#2)** over the **Stop Plate Body** and secure with **Spiral Retaining Ring (#1)**.



23. Grease the **Plug Valve** with **RDI 2015 performance grease** before and after Hydro Test.

Note: Refer to **Greasing Instructions** on page 20.

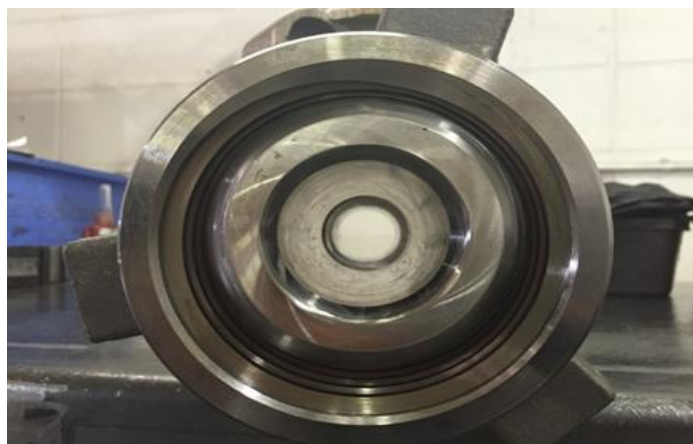


24. Remove excess **grease** from the bore of the **Plug Valve** with a clean rag.



25. Make a final inspection of the **Plug Valve**. Ensure the bores are in perfect alignment and the **Plug Valve Handle** corresponds to the open and close positions of the **Plug** when turning.

Note: Ensure the **Plug Valve** is left in the open position.



## Greasing Instructions

Ensure you have the most recent version of the RDI Greasing Instructions by visiting:

<https://rdironworks.com/products/plug-valves/>

or contact our sales team, toll-free:

1.855.973.4766

## Tear-Down Procedure

**WARNING:** If the **Plug Valve Handle** is hard to cycle or turn and the **Plug Valve** seems to be stuck or locked, there may be pressure trapped in the **Valve**, also known as “pressure locking”. If this happens, **DO NOT** continue to tear-down a **Pressure Locked Plug Valve**. (See Pressure Relieving Procedure for instructions).

Refer to the steps in the Assembly Procedure to tear-down the Plug Valve.

Thoroughly degrease and clean all parts that are disassembled. Check for any damage, replace as necessary.

## Pressure Relieving Procedure

Pressure locking is caused by a rapid decrease in line pressure which traps fluid at the original line pressure. The trapped pressure causes a net upward force of the **Plug** due to a differential in pressure area from top to bottom.

**Best Practice** for relieving trapped pressure in a **Plug Valve**. Connect the **Valve** and bring it to its last highest pressure. This will set the internal components in equilibrium and allow you to actuate the **Valve** while gradually decreasing the in-line pressure. This will ensure the **Plug** maintains freedom of rotation.

The **Button Grease Fitting (#5)** also allows the user to safely relieve the trapped pressure within the **Plug Valve**. One must exercise extreme caution when attempting to relieve a **Pressure Locked Plug Valve**. Start by **SLOWLY** turning the **Button Grease Fitting (#5)** a ¼ turn **counter-clockwise** to begin releasing the pressure. Actuate the **Valve** to ensure that all pressure has been released.

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<https://rdironworks.com/contact-a-location-near-you/>.



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