

INSTALLATION, OPERATION & MAINTENANCE FOR SVF CleanFLOW™ SERIES BALL VALVES

CleanFLOW
An SVF Product Line.



GENERAL

SVF Ball valves have been designed and engineered to provide long lasting and trouble-free service when used in accordance with the instructions and specifications herein.

The following instructions refer only to all SVF Standard Series SB7/SB7F/TSB7/TSB7F CleanFLOW Ball Valves.

Keep protective cover in place until moment of installation. Valve performance depends upon preventing of damage to ball surface. Upon removal of cover, make sure that the valve is completely open and free of obstruction.

If requested, valves can be shipped from the factory containing a silicon-based lubricant which aids in the assembly of the valve. This may be removed with a solvent if found intolerable.

STORAGE:

All manual valves are shipped in the fully open position with protective end caps (covers). Keep all protective packaging, flange covers, or end caps attached to the valves during storage. To avoid damage to the seat due to contact with the balls edge, leave the valve in the **fully open or closed position** during storage. It is recommended to keep the valves in a clean and dry environment until ready for use.

!!!CAUTION! Safety Precautions!!!

Before removing valve from pipeline

NOTE that:

Media flowing through a valve may be corrosive, toxic, flammable, a contaminant or harmful nature. Where there is evidence of harmful fluids having flowed through the valve, the utmost care must be taken. It is suggested that the following minimal safety precautions be taken when handling valves.

1. Always wear eye shields.
2. Always wear gloves and overalls.
3. Wear protective footwear.
4. Wear protective headgear.
5. Ensure that running water is readily accessible.
6. Have a suitable fire extinguisher ready if media is flammable.
7. Be sure that you are aware of the fluid that has been passing through the valve before opening or dismantling any valve. Require MSDS information.

By checking line gauges ensure that no pressure is present at the valve. Ensure that any media is released by operating valve slowly to half open position. Ideally, the valve should be decontaminated when the ball is in the half open position.

These valves, when installed, have body connectors which form an integral part of the pipeline and the valve cannot be removed from the pipeline without being dismantled.

Valves and accessories must not be used as a sole support of piping or human weight. Safety accessories such as safety relief (overpressure) valves are the responsibility of the system designer.

It is the user/system designer's responsibility to use insulation in high temperature applications. Refer to OSHA documents for more details.

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INSTALLATION

The valve may be installed for flow or vacuum in either direction. Carefully exclude pipe sealants from the valve cavity. When installing, use standard gaskets suitable for the specific service. Tighten flange bolts or studs evenly.

OPERATION

SVF ball valves provide tight shut off when used under normal conditions and in accordance with SVF's published pressure/temperature chart. If these valves are used in a partially open (throttled) position seat life may be reduced.

SVF ball valves have ¼ turn operation closing in a clockwise direction. It is possible to see when the valve is open or closed by the position of the lever handle. When the lever handle is in line with the pipeline, the valve is open.

Any media which might solidify, crystallize, or polymerize should not be allowed to stand in the ball valve cavity unless regular maintenance is provided. SVF offers a steam jacketed ball valve option for these applications.

TORQUE REQUIREMENTS

Torque ratings are subject to variations depending on the length of time between cycles and the media in the system.

Breakaway torque is that force which must be exerted to cause the ball to begin to open. Operating torque requirements will vary depending on the length of time between cycles, media in the system, line pressure and type of valve seat.

MAINTENANCE

SVF ball valves utilized self-wiping ball/seats design providing a long, trouble free life, and maintenance is seldom required. When necessary, valves may be repaired, using a small number of components, none of which require machining.

SVF ball valves are designed for easy service and assembly in the field. The following checks will help to extend valve life or reduce plant problems.

SVF ball valves utilize live-loaded stem seals featuring Belleville Washers (disk springs) that maintain constant pressure on the Stem Seal area even under a wide range of pressure and temperature fluctuations. In an event of leakage, please use the following steps to examine the valve:

STEM LEAKAGE

Examine the disk springs (Belleville washers) for damage. If in good condition tighten the gland nut until disk springs are firmly compressed, then back nut off 1/16th of a turn. If damaged, dismantle the stem down to the gland, fit new disk springs with their outer edges touching, replace and retighten using gland nut. Further maintenance necessitates dismantling of the valve.

LEAKAGE AT BODY JOINT

Check for tightness at the body connector bolts. If loose, tighten body bolts. Excessive force will damage the bolts. (See Table A below)

If there is still leakage it will be necessary to dismantle the valve and replace the body seals.

IN-LINE LEAKAGE

Check that the valve is fully closed. If leakage occurs while the valve is in the closed position, a seat or ball sealant surface may be damaged, and it will be necessary to disassemble the valve.

NOTE: If stem leakage and leakage at the body joint are not fixed with these steps, it will be necessary to dismantle the valve. If there is no evidence of stem leakage, the stem assembly should not be touched.

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REBUILDING

Before rebuilding, check that all the correct components are available and that they are fit for reassembly. When rebuilding, cleanliness is essential to allow long valve life and provide cost effective maintenance. CAUTION: BODY SEALS OR STEM SEALS ARE NOT REUSABLE. Care must be taken to avoid scratching the seats and seals during installation.

NOTE: Caution must be taken with valves that have been in hazardous media. They must be decontaminated before disassembly by relieving the line pressure and flushing the line with the valve in the partially open position. Protective clothing, face shields, gloves, etc., MUST BE USED for this operation.

A DISASSEMBLY OF VALVE (Removed from line)

- 1.) Remove the End Connectors (#2) by removing the Body Bolts (#20) and Body Bolt Nuts (#21).
- 2.) Once the End Connectors (#2) have been separated from the Body (#1), remove the Body Seals (#6), Seats (#5), and Seat Retainer, if applicable (#19).
- 3.) Make sure the Ball is in the closed position, thus the Ball (#4) can be taken out easily from the Body (#1).

B REMOVING STEM ASSEMBLY 1/4" – 2"

- 1.) Remove Handle (#16) by removing Handle Nut (#18) along with the Lock Washer (#17).
- 2.) Remove the Tab Lock (#15), Jam Nut (#14), Belleville Washers (#13), Gland (#12), and Stem Seals (#10 and # 11).
- 3.) Push the Stem (#7) down into the body cavity to remove. Once removed take off the Thrust Washer (#8 and #9).

C REMOVING STEM ASSEMBLY 2-1/2"

- 1.) Remove Wrench Block (#17) by loosening the Handle Bolt (#18).
- 2.) Remove the Tab Lock (#15), Jam Nut (#14), Belleville Washers (#13), Stop Plate (#12), Gland (#11), and Stem Seals (#10).
- 3.) Push the Stem (#7) down into the body cavity to remove. Once removed, take off the Thrust Washer (#8 and #9).

D REMOVING STEM ASSEMBLY 3" – 4"

- 1.) Remove Wrench Block (#18) by loosening the Handle Bolt (#19).
- 2.) Remove the Tab Lock (#16), Jam Nut (#15), Belleville Washers (#14), Stop Plate (#13), Gland (#12), and Stem Seals (#10 and # 11).
- 3.) Push the Stem (#7) down into the body cavity to remove. Once removed, take off the Thrust Washer (#8 and #9).

E REMOVING STEM ASSEMBLY 6"

- 1.) Remove Wrench Block (#17) by loosening the Handle Bolt (#18).
- 2.) Remove the Tab Lock (#15), Jam Nut (#14), Belleville Washers (#13), Stop Plate (#12), Gland (#11), and Stem Seals (#10).
- 3.) Push the Stem (#7) down into the body cavity to remove. Once removed, take off the Thrust Washer (#8 and #9).

F INSPECTION

- 1.) The ball and the surfaces of the seats should be free of pit marks and scratches. Light marring from the action of the ball against the seats is normal and will not affect the operation of the valve.
- 2.) The stem and stem housing should be free of pit marks and scratches.

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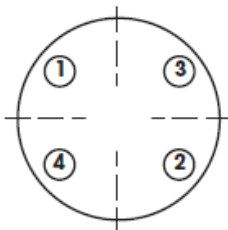
G REASSEMBLY

- 1.) Refer to “REMOVING STEM ASSEMBLY” (per valve size). Follow the reverse order for Reassembly.
- 2.) When stem assembly is complete, tighten Jam Nut (#14) according to the values in Table A.
- 4.) With the Stem in the closed position, insert the Ball (#4) into Body (#1) so that stem slot engages with the tang at the base of the stem.
- 5.) Make sure the Body Seals (#6) rests squarely on the center seal surface of the Body (#1).
- 6.) Insert Seats (#5) into the Body (#1). Make sure seats rest firmly on back surface of each recess.
- 7.) Merge the End Connectors (#2 or #3) with the Body (#1).
- 8.) In the final assembly step, ensure that the Body Bolts / Nut are tightened according to the torque values in Table A

TORQUE SPECS

Certain precautions need to be followed when tightening bolts down to their corresponding torques to help prevent bolt galling. There are two passes each bolt must undergo during the process, first pass and the final pass. Once every bolt has met the first pass requirement, the final pass can be initiated. When tightening bolts, it is necessary to follow the corresponding bolt patten shown below.

BOLT TIGHTENING SEQUENCE
4 Bolt Pattern



BOLT TIGHTENING SEQUENCE
8 Bolt Pattern

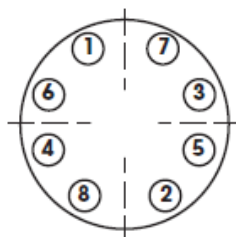


TABLE A: TORQUE REQUIREMENTS (in-lbs.)

Valve Size	Bolt Pattern	First Pass	Final Pass	Stem Nuts
1/4"	4	48	80	35
3/8"	4	48	80	35
1/2"	4	48	80	35
3/4"	4	48	80	35
1"	4	101	168	80
1-1/2"	4	207	345	115
2"	4	207	345	115
2-1/2"	4	207	345	265
3"	8	207	345	530
4"	8	346	576	530
6"	10	575	1450	650

REPAIR KITS

Repair Kits are available from SVF Flow Controls. The table below show what the kits consist of. When ordering a Repair Kit, please be sure to specify the type, size, and seating material of the valve.

When repairing a valve, use only SVF Flow Controls authorized spare parts including bolts and nuts, etc. In addition to maintenance kits, spare parts are available from SVF Flow Controls, i.e. Center Section Kits, Ends, Fastener Kits.

Components from a different valve series should not be used with the repair of any other valve. If the valve is altered in any way, no liability can be accepted by SVF Flow Controls.

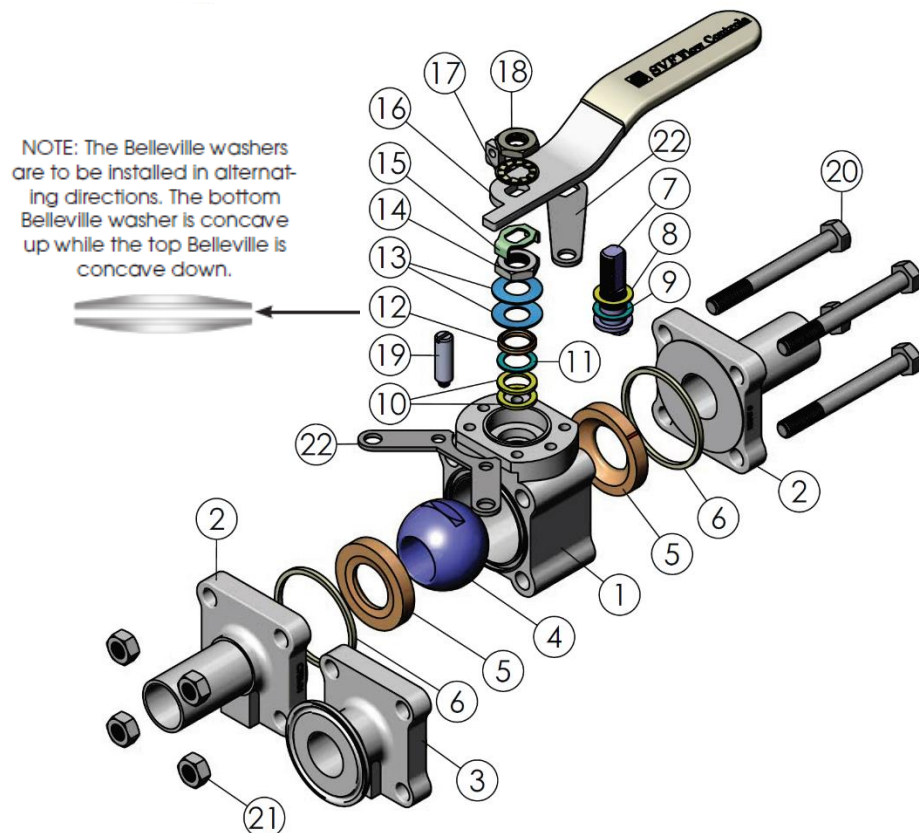
TABLE B: GENERAL REPAIR KIT

Part	Quantity
Thrust Washer	1
Stem Seals	2
Belleville Washers	2
Seats	2
Body Seals	2

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Size: ½" to 2"

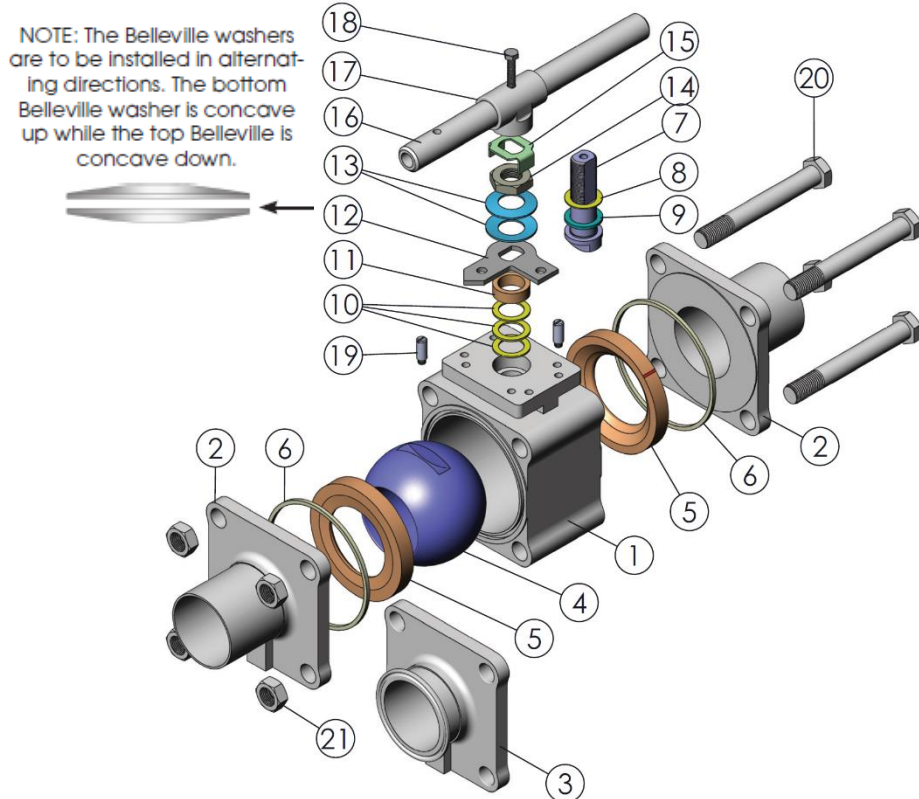
Item #	Part Name	Materials	Recommended Spare	Wetted
1	Body	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
2	ETO End	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
3	Tri-Clamp End	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
4	Ball	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
5	Seat	TFM1600™	X	X
6	Body Seals	PTFE, TFM1600™	X	X
7	Stem	316L SS ASTM A351-CF3MN / A479-316L / A276-316L, Hastelloy A494 CW-12MW	-	X
8	Stem Thrust Washer	TFM1600™	X	X
9	Stem Thrust Washer	Virgin PEEK	X	-
10	Stem Seal	TFM1600™	X	-
11	Stem Seal	Virgin PEEK	X	-
12	Gland Follower	316 Stainless Steel	X	-
13	Belleville Washer	301 Stainless Steel	-	-
14	Jam Nut	304 Stainless Steel	-	-
15	Lock Tab	304 Stainless Steel	-	-
16	Lever Handle	304 Stainless Steel	-	-
17	Serrated Lock Washer	304 Stainless Steel	-	-
18	Handle Nut	304 Stainless Steel	-	-
19	Stop Pin	304 Stainless Steel	-	-
20	Body Bolt	304 Stainless Steel	-	-
21	Body Nut	304 Stainless Steel	-	-
22	Locking Device (Optional)	304 Stainless Steel	-	-



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Size: 2-1/2"

Item #	Part Name	Materials	Recommended Spare	Wetted
1	Body	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
2	ETO End	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
3	Tri-Clamp End	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
4	Ball	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
5	Seat	TFM1600™	X	X
6	Body Seals	PTFE, TFM1600™	X	X
7	Stem	316L SS ASTM A351-CF3MN / A479-316L / A276-316L, Hastelloy A494 CW-12MW	-	X
8	Stem Thrust Washer	TFM1600™	X	X
9	Stem Thrust Washer	Virgin PEEK	X	-
10	Stem Seal	TFM1600™	X	-
11	Gland Follower	316 Stainless Steel	X	-
12	Stop Plate	304 Stainless Steel	-	-
13	Belleville Washer	301 Stainless Steel	-	-
14	Handle Nut	304 Stainless Steel	-	-
15	Lock Tab	304 Stainless Steel	-	-
16	Wrench	304 Stainless Steel	-	-
17	Wrench Block	304 Stainless Steel	-	-
18	Handle Bolt	304 Stainless Steel	-	-
19	Stop Pin	304 Stainless Steel	-	-
20	Body Bolt	304 Stainless Steel	-	-
21	Body Nut	304 Stainless Steel	-	-

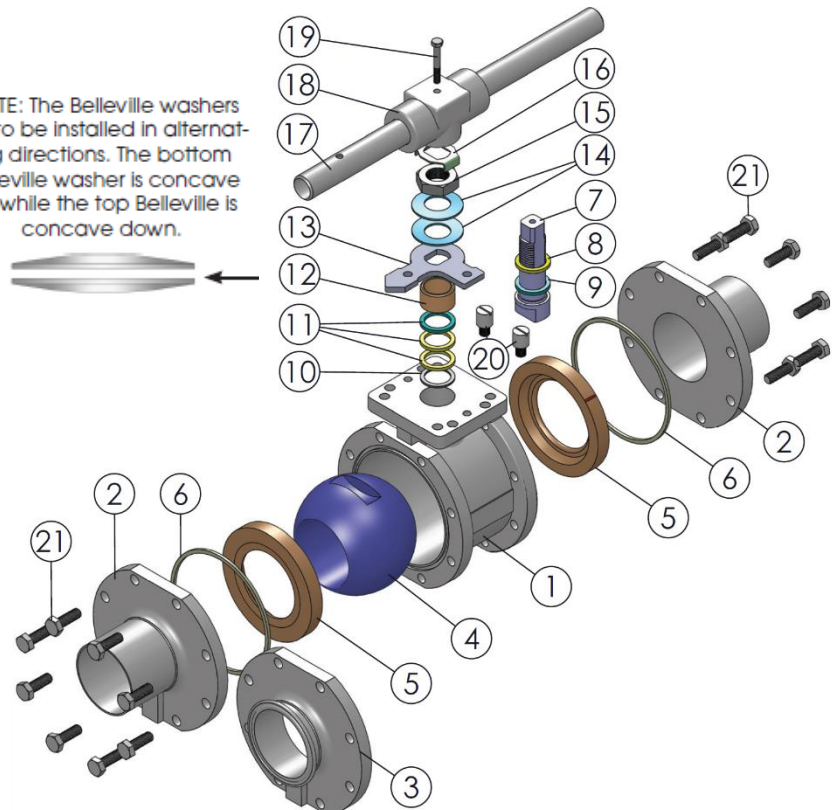


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Size: 3" – 4"

Item #	Part Name	Materials	Recommended Spare	Wetted
1	Body	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
2	ETO End	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
3	Tri-Clamp End	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
4	Ball	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
5	Seat	TFM1600™	X	X
6	Body Seals	PTFE, TFM1600™	X	X
7	Stem	316L SS ASTM A351-CF3MN / A479-316L / A276-316L, Hastelloy A494 CW-12MW	-	X
8	Stem Thrust Washer	TFM1600™	X	X
9	Stem Thrust Washer	Virgin PEEK	X	-
10	Stem Location Ring	316 Stainless Steel	X	-
11	Stem Seal	TFM1600™	X	-
12	Gland Follower	316 Stainless Steel	X	-
13	Belleville Washer	301 Stainless Steel	-	-
14	Jam Nut	304 Stainless Steel	-	-
15	Lock Tab	304 Stainless Steel	-	-
16	Wrench	304 Stainless Steel	-	-
17	Wrench Block	304 Stainless Steel	-	-
18	Handle Bolt	304 Stainless Steel	-	-
19	Stop Pin	304 Stainless Steel	-	-
20	Body Bolt	304 Stainless Steel	-	-
21	Body Nut	304 Stainless Steel	-	-

NOTE: The Belleville washers are to be installed in alternating directions. The bottom Belleville washer is concave up while the top Belleville is concave down.



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Size: 6"

Item #	Part Name	Materials	Recommended Spare	Wetted
1	Body	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
2	ETO End	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
3	Tri-Clamp End	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
4	Ball	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	-	X
5	Seat	TFM1600™	X	X
6	Seat Retainer	316L SS ASTM A351-CF3MN, 316L SS ASTM A182-F, Hastelloy A494 CW-12MW	X	X
7	Body Seals	PTFE, TFM1600™	X	X
8	Stem	316L SS ASTM A351-CF3MN / A479-316L / A276-316L, Hastelloy A494 CW-12MW	-	X
9	Stem Thrust Washer	TFM1600™	X	-
10	Stem Seal	TFM1600™	X	-
11	Gland Follower	304 Stainless Steel	X	-
12	Stop Plate	304 Stainless Steel	X	-
13	Belleville Washer	301 Stainless Steel	-	-
14	Handle Nut	304 Stainless Steel	-	-
15	Lock Tab	304 Stainless Steel	-	-
16	Wrench	304 Stainless Steel	-	-
17	Wrench Block	304 Stainless Steel	-	-
18	Handle Bolt	304 Stainless Steel	-	-
19	Stop Pin	304 Stainless Steel	-	-
20	Body Bolt	304 Stainless Steel	-	-

