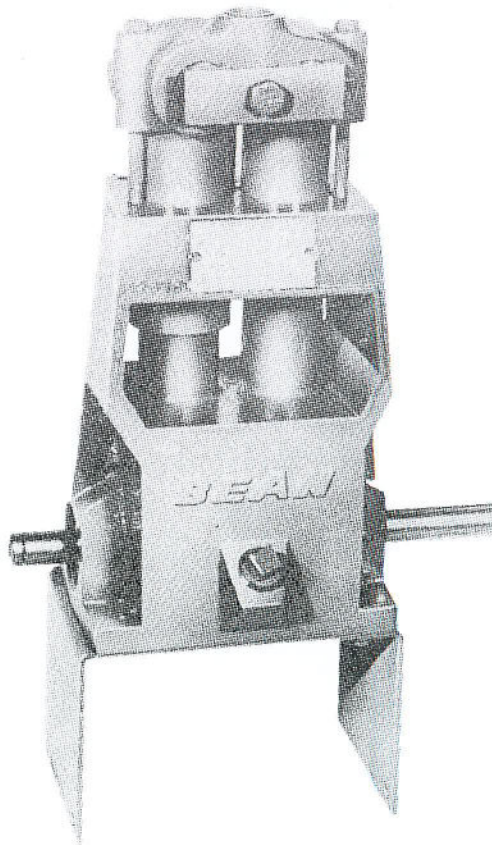


# **Operators Manual**

**Model  
R 1010 Pump**



## Section A

### Safety Instructions

Accidents occur every year because of careless use of farm equipment. You can avoid hazards involved with high pressure pumping operations by following these safety instructions.

#### **⚠ WARNING**

**Always use a pressure gauge when operating pump.** The pressure must not exceed specified rate pressure of pump or pump could be damaged causing leakage, resulting in injury to personnel in vicinity.

**Do not adapt relief valves to maintain more pressure than their specifications state.** This could result in relief valve or pump casing bursting due to too much pressure. Personnel in general area could be physically harmed.

**Do not put a valve between the pump and relief valve.** If the pump should be started with this valve closed this could put excessive pressure on the pump which could cause the pump case to burst and might injure personnel or other equipment in vicinity.

**Be sure to use shields or covers on all sheaves, belts, and drives.** Guards can prevent personnel from becoming seriously injured by being entangled in fast rotating parts.

**Always disconnect the pump from the power source before performing any service to the pump.** Failure to do this could cause electrical shock or injury from moving pump parts.

**Always relieve pressure on the system before performing fluid end maintenance.**

Failure to do so may spray water or chemicals on service personnel causing water burns or chemical exposure.

**Use extreme care when using solvents to clean pump and pump parts.** Most solvents are highly flammable. Observe all safety instructions on packaging. Fires could result in serious burns to personnel and serious damage to equipment.

**Do not modify the pump to function beyond its specifications.**

Always read chemical manufacturers labels at least twice upon purchase of product and reread before using.

Always observe all warnings on chemical products. Failure to do so could result in operator or others being exposed to toxic chemicals which could result in serious illness. Remember chemical manufacturers go to much research and expense to develop labels for your protection.

**Be sure you recognize the four categories of toxicity and their key words.**

#### Approximate Lethal Doses

Toxicity Level	Category	Key Word	US Measurement	International Metric
High	1	Danger	1 taste to 1 tsp	1 taste to 5 ml
Moderate	2	Poison	1 tsp to 1 fl. oz.	5 ml to 30 ml
Low	3	Warning	1 oz. to more than 1 pt.	30 ml to 5 liter
None	4	Caution		
		None		

**Do dispose of all chemical containers as per instructions on label.** Failure to do so could result in contaminating the environment with chemicals.

**Inspect hose and hose connections daily.**

**Always wear rubber gloves when tightening connections.** Damaged, loose or worn hose could result in operator being exposed to toxic chemicals which could result in serious illness or faulty sprayer operation.

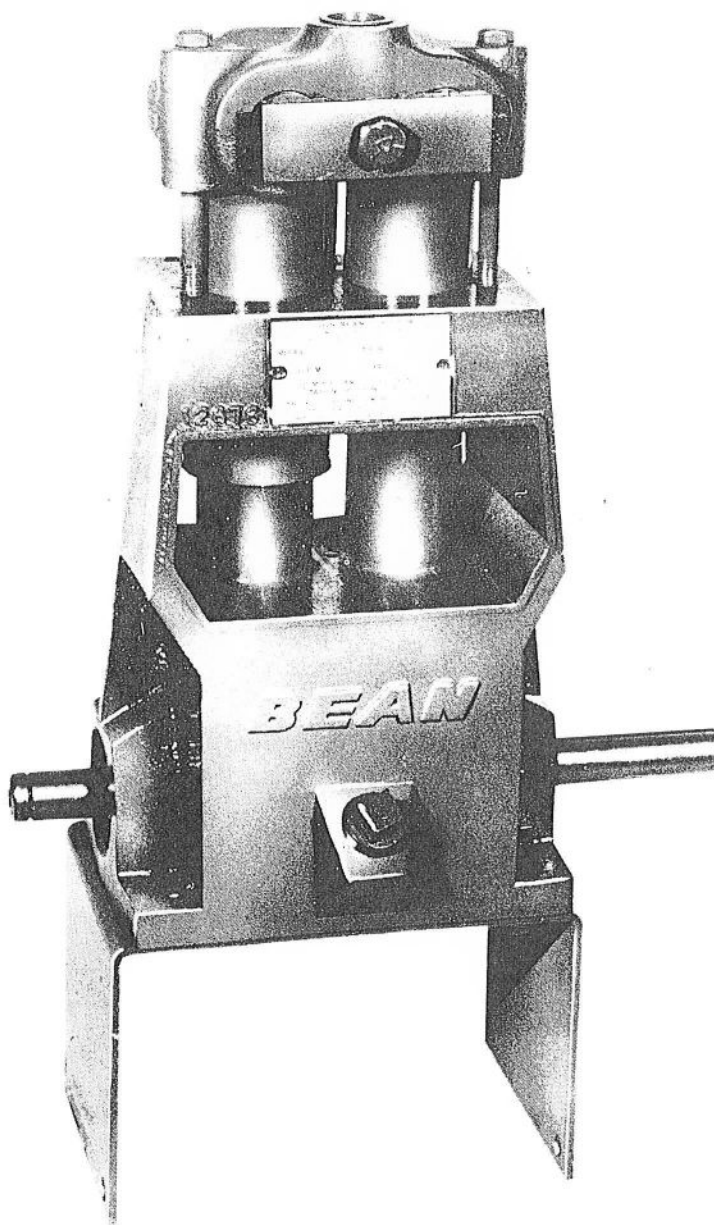
**Always use the proper application rate.** To assure proper application rate calibrate sprayer frequently. The wrong application rate of a pesticide concentration that is too high may expose the operator and the environment to danger.

Use only genuine FMC parts for any necessary replacement. Special alloy steels are used in many parts which are important to the equipment design. Homemade parts may look the same but might be dangerous in operation.



## Section B Specifications R-10 Pump

	<u>English</u>	<u>Metric</u>
Type	Piston	Piston
Gal/Min	10 gpm	37.6 liters per min.
Pressure	500 psi	3447 Kpa
Crankshaft rpm	580 rpm	580 rpm
Bore	1-5/8"	4.13 cm
Stroke	1"	2.54 cm
Power req.	3.4 hp	2.5 KW
Lubricating oil	SAE 30	SAE 30
Crankcase capacity	1 pt.	1/2 liter



# Section C

## Servicing the pump

Safety first — disconnect the power source before starting any servicing of the pump.

### 1. Servicing the plunger packings

#### a. Remove plunger packings

Release the valve chamber from pump by removing three cap screws (8) using pump wrench (40).

Lift valve chamber (9) from cylinders (11).

Lift cylinders from top of pump case (21).

Remove cap screws (12), lock-washers (13), packing washers (14), plunger packings (15) and packing holders (16).

Inspect 'O' rings (17), pilot washers (19), umbrellas (18) and sleeves (20).

Clean all parts and place them on a clean surface, replacing any worn parts.

#### b. Re-assembling plunger packings

Inspect bottom gaskets (10) and replace is necessary.

NOTE - If it is necessary to replace one gasket, at either top or bottom of cylinders, then both top and bottom gaskets should be replaced on both cylinders.

Place 'O' rings (25) and packing holders (26) in position on ends of crosshead rods.

Place cylinders (31) in position in recesses at top on pump case.

Turn the pump by hand, to raise each crosshead rod to the top as needed.

Oil the plunger packings (27) and place them in the open ends of cylinders, with the cup UP.

Use the thumb to press the packings into each cylinder firmly and squarely on ends of each plunger rod.

Follow by placing the brass packing washer (28), with ribbed side 'down,' inside each packing cup.

Secure packings, washers and holders to rods with cap screws (29), tightening them until washers and cups are firmly seated on the rod ends.

Inspect the top gaskets (10) and replace BOTH top and bottom gaskets if either shows defect, holding them in place in the valve chamber with oil or grease if necessary.

Return the valve chamber to position over the cylinders, making sure that gaskets (30) and cylinders (31) are properly positioned in recesses at top and bottom.

Re-tighten cap screws (33) alternately and evenly until parts are snugly seated.

### 2. Servicing the valves

#### a. Removing valves from pump

Remove cap screw (40), clamp (39) and lift out valve covers (38) with 'O' rings (35) attached.

Remove the discharge valve spring and disc assemblies (36) and valve cages (37).

Insert the round end of valve seat puller in the opening at center of valve seats (34) and loosen seats from the valve chamber by a 'rocking' motion of the tool.

Remove the valve seats from the valve chamber recesses using curved end of tool.

Repeat the above procedures to remove the suction (intake) valve parts which are identical to discharge valve parts and located back of them in the valve chamber.

Clean and inspect all parts, replacing all worn parts as needed.

NOTE - Valve seats (34) may be used either side up, thus if one side shows wear, the opposite side may be placed in the 'UP' position to provide a new seat.

#### b. Assembling valves to pump

With 'O' rings (35) in place on valve seats, place a few drops of oil on them and insert them squarely and firmly in place at bottom of recesses in the valve chamber.

Place the valve cages (37) on the valve seats, placing the disc and spring assemblies inside the cages on the valve seats.

Repeat this procedure to assemble the top (discharge) valve parts.

With the 'O' rings (35) in the BOTTOM GROOVE on each valve cover (35), oil and place them in the openings over the valves.

Replace clamp bar (39) and cap screw (40) **ONLY SNUGLY. Torque to 15-20 ft. lbs.**

**IMPORTANT** - Excessive tightening on cap screw (1) can damage valve parts.

### 3. Servicing the crankshaft

#### a. Removing the crankshaft

Remove valve chamber and cylinder as previously instructed.

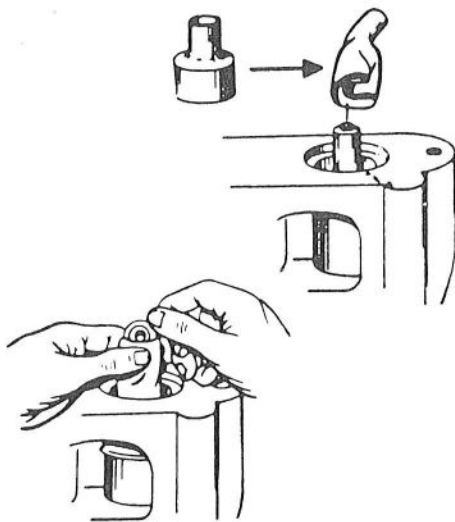
Remove 1/4" pipe plug (16) to drain oil from pump crankcase.

Disconnect and remove pump from mounting.

Remove cap screws (17), cup washer (18) and mounting base (15) carefully to protect the gasket (14).

Remove caps from bearings (3), using a center punch or other instrument to mark caps and rods for proper re-matching in reassembly.

Push the connecting rod and crosshead assemblies into the case to clear crankshaft.



Fold the plastic umbrellas, as shown to insert them through openings and over ends to Crossheads Rods.

Press top of umbrellas to place pilot washer over ends of rods WITH GROOVE UP.

Remove oil slinger (6) from the Crankshaft.

Remove the driven sheave from the crankshaft followed by removal of snap rings (13).

Place a wood block against the end of the crankshaft and drive it from the case.

Clean all parts ready for reassembly.

#### b. Assembling the crankshaft in the pump

Inspect all parts carefully, replacing any worn parts with BEAN exact replacement parts.

**CAUTION** - Never pound directly on bearing when removing or installing them on the crankshaft.

A wood block, with suitable opening, or proper block supports, in a press, to assure equal pressure on most or all of the bearing, is best for this operation.

Press the bearings against the shoulders on the crankshafts and place the assembly through openings into the pump case.

Assembly the oil seats (12) with the 'lip' of the seal facing the inside of the pump case, being careful when pressing the seals over the crankshaft, to avoid damaging or folding the 'lip' of the seal under.

Insert the snap rings (13) securely in the grooves in the openings, against the oil seals.

Tap the ends of the crankshaft lightly to position the bearings properly, allowing slight end play on the crankshaft.

Re-assemble the connecting rods and bearings and attach crosshead assemblies, being sure to match caps and rods exactly as marked when disassembled.

Complete the re-assembly by reversing procedure 3a, being sure to replace drain plug (16).

Remove plug (21) and fill crankcase to level of plug with best grade SAE30 clean motor oil.

Turn pump a few revolutions by hand, to be sure all parts are properly installed before operating pump.

#### 4. Servicing crossheads

##### a. Removing crosshead:

Remove the valve chamber, cylinder and the plunger packings as in procedure 1a.

Proceed as in paragraph 3a to remove mounting base (15), gasket (14) and connecting rod caps (3) and bearings (5).

Turn the crankshaft by hand, to allow removal of crosshead (9) through the pump case opening.

Clean all parts thoroughly and replace any worn parts with BEAN exact replacement parts.

##### b. Assembly crossheads in the pump:

Reverse procedure 4a, taking care to assembly all parts in their exact former positions.

#### 5. General maintenance of the pump

Drain and refill the pump crankcase with best grade SAE30 oil after each 100 hours of use or at least once each season of use.

Maintain oil at filter plug level.

Keep all piping and mounting bolts tight.

Replace all worn parts with promptly BEAN exact replacement parts.

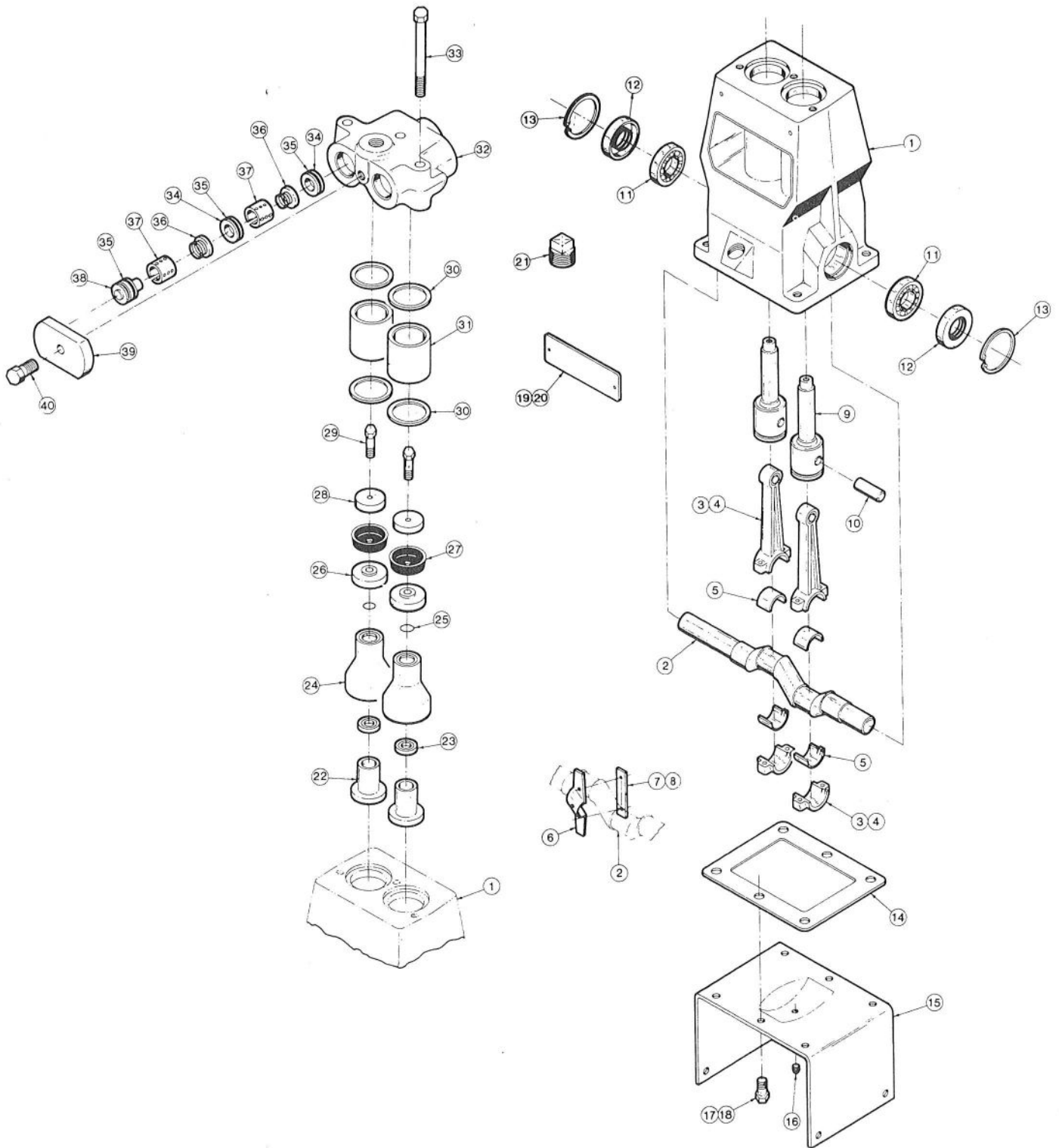
#### Freezing weather care of pump

**IMPORTANT** - Precautions should be taken to prevent damage to the pump from freezing.

Observe the following steps carefully to drain the pump when freezing temperatures are expected:

1. Run the pump a few minutes after the tank has been drained to evacuate all water possible from the pump.\*
2. Remove drain plugs from low points in all connecting piping.
3. Remove three cap screws (8) and lift valve chamber from cylinders and tip it to drain water from within valve chamber.
4. Wipe the inside of the cylinders dry with a clean sponge or cloth.

\*NOTE - Feeding fuel oil or diesel fuel into the pumping system, until sure that the system is filled with oil, will protect the system from freezing and possible internal corrosion.



## Parts List

### R-10 Pump Assemblies

(1244299, 1270921, 5253823, 5257422)

#### Item

No.	Part No.	Description	Qty.
1	1267611	Pump Case	1
2	1244980	Crankshaft (Long Base Pumps)	1
	1275026	Crankshaft (Short Base)	1
3	1263906	Connecting Rod	2
4	1278439	HHCS 1/4 - 20 x 1 Lock	4
5	1263739	Bearing Insert, Pair	2
6	1255285	Oil Slinger RH	1
7	1272419	Speed Nut	1
9	1216823	Crosshead	2
10	1219650	Wrist Pin	2
11	1177804	Bearing, Ball	2
12	1219669	Oil Seal	2
13	1113528	Retainer Ring	2
14	1219606	Gasket, Mounting Base	1
15	1255297	Mounting Base (Long Base)	1
	1270922	Short Base	1
16	1105666	Pipe Plug 1/4 Std. Galv.	1
17	1100068	HHCS 3/8-16 x 3/4	6
18	1177455	Spring Washer 3/8 Style 8	6
19	5262738	Plate Model, Spec Pump/Spray	1
20	1187413	Screw, Round Head Slotted #4 X3/16	2
21	1105060	Pipe Plug 3/4 Blk Std.	1
22	1218743	Sleeve	2
23	1269388	Washer, Umbrella	2
24	1279148	Umbrella	2
25	1101339	O-ring 11/16 O.D. x 1/16 Buna-N	2
	320040	O-ring (Use w/Rulon Packing)	2
26	1282557	Packing Holder 1-5/8 Cyl.	2
27	1251925	Packing 1-5/8	2
	1255223	Packing, Rulon	2
	1255224	Washer, Back Up, Rulon Packing	2
	5257807	Packing, 1-5/8 Cobox, (on 5257422)	2
28	5257218	Packing Washer 1-5/8	2
	5257986	Packing Washer, (on 5257422)	2
29	1284516	HHCS 5/16-18 x 1-1/2 SS	2
30	A91684	Gasket Cylinder	4
31	1241364	Cylinder 1-5/8	2
32	1241397	Valve Chamber	1
	5257095	Valve Chamber (on 5257422)	1
33	1101262	HHCS 3/8-16 x 5 Gr5	3
34	1219615	Valve Seat	4
	5260142	Valve Seat Raised Face (on 5257422)	4
35	1177394	O-ring, 1-3/16 OD x 1/8 Buna-N	6
	320045	O-ring, Rulon Packing	6
36	5253499	Valve Disc & Spring Assembly	4
37	1219610	Valve Cage	4
38	1219614	Valve Cover	2
39	1255887	Clamp Valve Cover	1
40	1100064	HHCS 1/2-13 x 1-1/2	1

#### Valve Kit

(5251825)

#### Item

No.	Part No.	Description	Qty.
	5253499	Valve Spring & Disc Assembly SS	4
	1219615	Seat, Valve SS	4
	1177394	O-ring 1-3/16 x 1/8	6

#### Cylinder Packing Kit (Std. Pump)

(5251827)

#### Item

No.	Part No.	Description	Qty.
	1251925	Cylinder Packing 1-5/8, Buna-N	2
	A91684	Gasket, Cylinder	4
	1284516	HHCS 5/16-18 x 1-1/2 SS	2
	1185360	O-ring 3/4 OD x 3/32	2
	1101339	O-ring 11/16 OD x 1/16	2

#### Seat Remover - Duplex (1250638)