



EF Series Disassembly and Reassembly Instructions

Disassembly


1. **Prior to disassembly** - remove the motor and discharge tubing.
2. **Diffuser Removal - For EFP & EFV Models** – When looking at the bottom of the pump, loosen the diffuser (item 17) by turning it clockwise (left-hand thread) 2-3 turns or until it touches the impeller (item 18). See figure 1.


Figure 1
3. **Impeller Removal** - Using a flat-head screwdriver, unthread the impeller (item 18) by turning it counter clockwise (right-hand thread). Hold the coupling insert and coupling (items 1 & 2) in one hand, and unthread with the other. Note: If the shaft unthreads from the coupling, use a pliers to hold the top of the shaft. Care should be taken to not damage the shaft threads. For longer 40” and 48” pump lengths, two people may be required to hold the shaft and unthread the impeller. See figure 2.

Figure 2
4. Unthread the impeller roughly 10 turns or until loose.
5. Now finish unthreading the diffuser. If the impeller is loose, it will come off with the diffuser.
6. To remove the impeller from the diffuser, shake it until it engages the impeller guard inside the diffuser, and turn it counter clockwise with a flat head screwdriver or your fingers.
7. **Diffuser Removal - For EFS Models** - Unthread the diffuser cover (item 19). Turn it clockwise (left-hand thread). Unthread the impeller (item 18) turning it counter clockwise (right hand thread) using a flat-head screwdriver or hand while holding the coupling insert and coupling (items 1 & 2) with the other hand. Note: If the shaft unthreads from the coupling, use a pliers to hold the top of the shaft. Care should be taken to not damage the shaft threads. For longer 40” and 48” pump lengths, two people may be required to hold the shaft and unthread the impeller. Unthread the diffuser (item 17) turning it clockwise (left-hand thread).
8. **Shaft Removal** - for all models - To remove the shaft (item 4), tap the bottom of the shaft on a piece of wood or plastic and push the shaft up and out of the head (item 6). Grab the half coupling or bearing and pull the shaft assembly straight out of the head. Note: Take care to not bend the shaft. **Important** - The shaft should only be removed if the bearing is frozen and needs to be replaced.
9. **Outer Tube Removal** - For EFP & EFV Models - Remove the outer tube (item 16). Hold the head (item 6) in one hand and with the other hand, turn the outer tube clockwise (left-hand thread). When completely unthreaded, pull the outer tube away from the head exposing the inner tube and center support (items 13 & 14).

10. **Inner Tube & Center Support Removal** - To remove the inner tube and center support, turn the inner tube to unseat the o-rings (item 12) and then pull the inner tube away from the head.
11. **Shaft Sleeve Removal** - The shaft sleeve (item 15) will drop out of the inner tube by holding it in a vertical position and turning.
12. **Center Support Removal** - 40" and 48" lengths only - If the center support (item 14) needs to be replaced, it can be removed by spreading open the fingers and disengaging it from the inner tube. See figure 3.
13. **Inner Tube & Shaft Sleeve Removal** - The outer tube and head for EFS models are welded together. To remove the inner tube and shaft sleeve (items 13 & 15), hold the outer tube and head assembly in a vertical position, and the shaft sleeve will fall out. To remove the inner tube, "pretend" to hit the bottom of the pump on the floor but stop before it actually hits. This motion will allow the weight of the inner tube to release the o-rings, and it will drop out of the bottom of the pump. It is recommended to do this over a soft surface to prevent damaging the inner tube as it drops out of the pump.
14. **Seal Removal** - To remove the seal (item 5) from the head (item 6 or item 16 for EFS), use a hook tool, available at most hardware stores, to pull the seal out from the top of the head. Take care not to damage the seal seat area. See figure 4. Note: The seal should be replaced if worn or the bearing is failing or frozen.

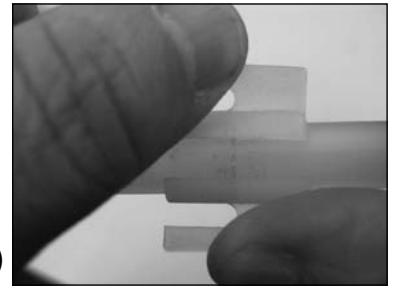


Figure 3

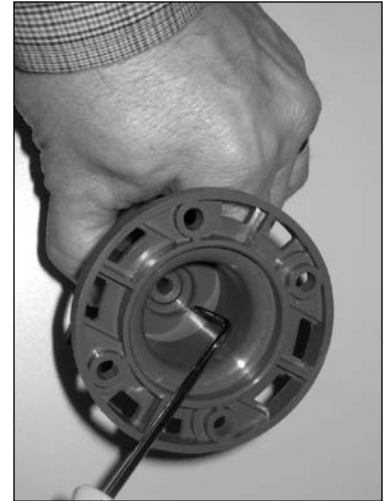


Figure 4

Reassembly

1. **Seal Installation for EFP & EFV models** - Take the head (item 6), and for EFS models take the outer tube with head (item 16), and install a new seal (item 5). Insert the open part of the seal into the lower bore of the head. See figure 5. Use a 3/8" (9.5 mm) dowel to press and seat the seal into place. Seal sits slightly below the surface. See figure 6.



Figure 5



Figure 6

2. Reinstall the half coupling, bearing and shaft (items 2, 3 & 4) as an assembly into the head. If the bearing needs to be replaced it is recommended to purchase a new shaft, bearing and half coupling assembly because the EF Series shaft can be damaged when removing or installing the bearing. Use the chart below to select the shaft assembly that is required.

QUANTITY	SHAFT REPLACEMENT KITS	PART NUMBER	
	DESCRIPTION	MODELS EFP & EFS	MODEL EFV
1	SHAFT - 16" - bearing & half coupling	107589-1	107590-1
1	SHAFT - 27" - bearing & half coupling	107589-2	107590-2
1	SHAFT - 40" - bearing & half coupling	107589-3	107590-3
1	SHAFT - 48" - bearing & half coupling	107589-4	107590-4

3. **Shaft Installation** - Slide the shaft down through the seal until the bearing engages the bearing bore in the head. Use any size dowel under 1" (25.4 mm) in diameter and press the half coupling, bearing and shaft into place using an arbor press or by lightly tapping with a soft mallet. Note: Do not use excessive force. Unthread the half coupling counter clockwise (right hand thread) to verify that the bearing is seated properly. See figure 7. Reinstall the half coupling.



Figure 7

4. **Inner Tube, Center Support & Shaft Sleeve Installation** - for all models - Reinstall the inner tube, center support (if used) and shaft sleeve (items 13, 14 & 15). Slide the shaft sleeve onto the shaft. The shaft sleeve is self-positioning so slide it up as far as it will go on the shaft. Reinstall the inner tube with center support (if used) over the shaft and shaft sleeve. The double o-ring side seats up into the head with a slight twisting motion. Make sure the inner tube is seated properly. The bottom of the inner tube will be flush with the bottom of the outer tube when properly seated.

5. **Outer Tube Installation** - for EFP & EFV models - Install the outer tube (item 16). Make sure the center support (if used) is installed correctly on the inner tube. The center support has a slight taper that allows the outer tube to slide easily over it.

See figure 8. Slide the outer tube with external threads over the shaft, shaft sleeve, inner tube and center support (if used) up into the head (item 6). Turn the outer tube counter clockwise (left hand thread) to tighten it into the head. Hand tighten.

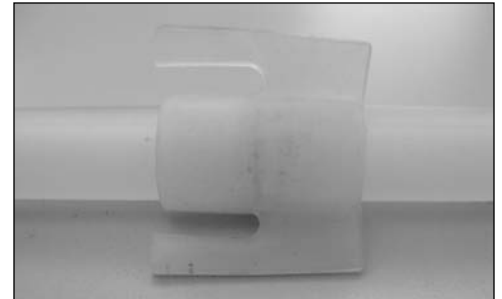


Figure 8

6. **Diffuser Installation** - for all models - Install the diffuser (item 17) onto the bottom of the outer tube. Insert the shaft through the small support opening on the diffuser. See figure 9. The small support opening will insert up inside the inner tube (item 13). With a slight push and turn, thread the diffuser into the outer tube (item 16) turning counter clockwise (left hand thread). EFP and EFV models - only tighten the diffuser halfway or 3-4 turns. See figure 10. Insert the impeller (item 18) into the bottom of the diffuser. With a slight push and turn the impeller should twist through the impeller guards and engage the shaft threads. Use a flathead screwdriver to tighten the impeller to the shaft turning clockwise (right hand thread). Hold the half coupling (item 2) in one hand while turning the impeller with the other. Hand tighten. Once the impeller is tightened, finish tightening the diffuser turning counter clockwise (left hand thread). Hand tighten.



Figure 9



Figure 10



Figure 11

7. **For EFS Models** - Thread the diffuser (item 17) completely onto the bottom of the outer tube (item 16). Thread the impeller onto the shaft by hand. While holding the half coupling with the other hand, turn the impeller clockwise (right hand thread). See figure 12. Install the diffuser cover (item 19), EFS models only, onto the diffuser turning counter clockwise (left hand thread). Hand Tighten.

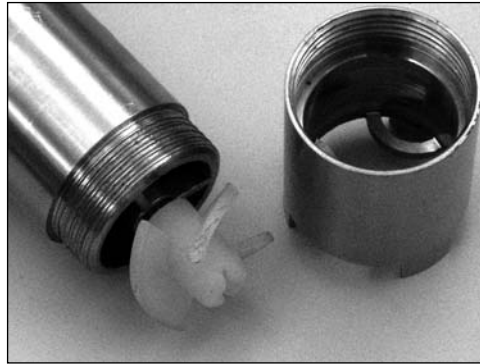
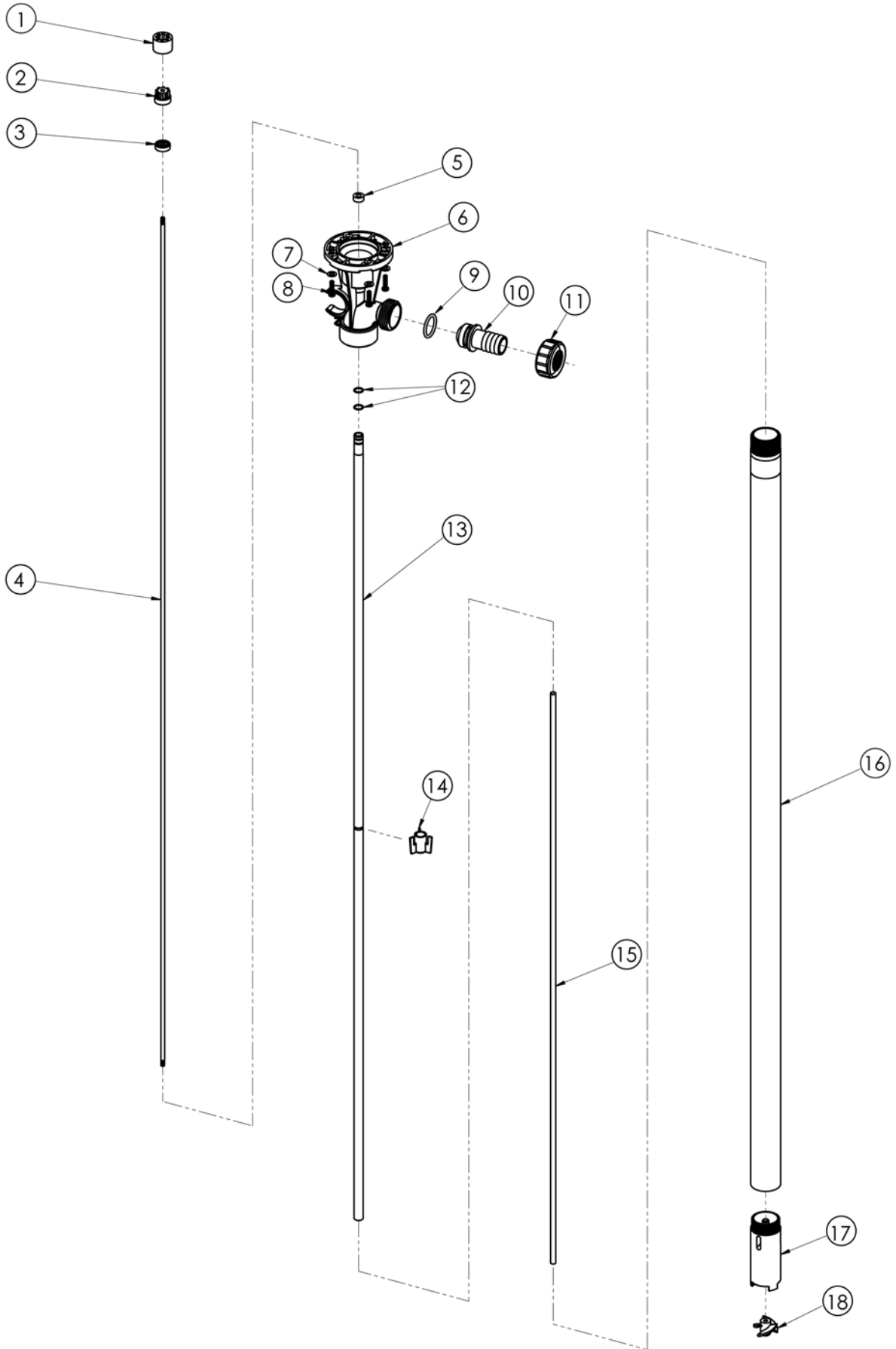
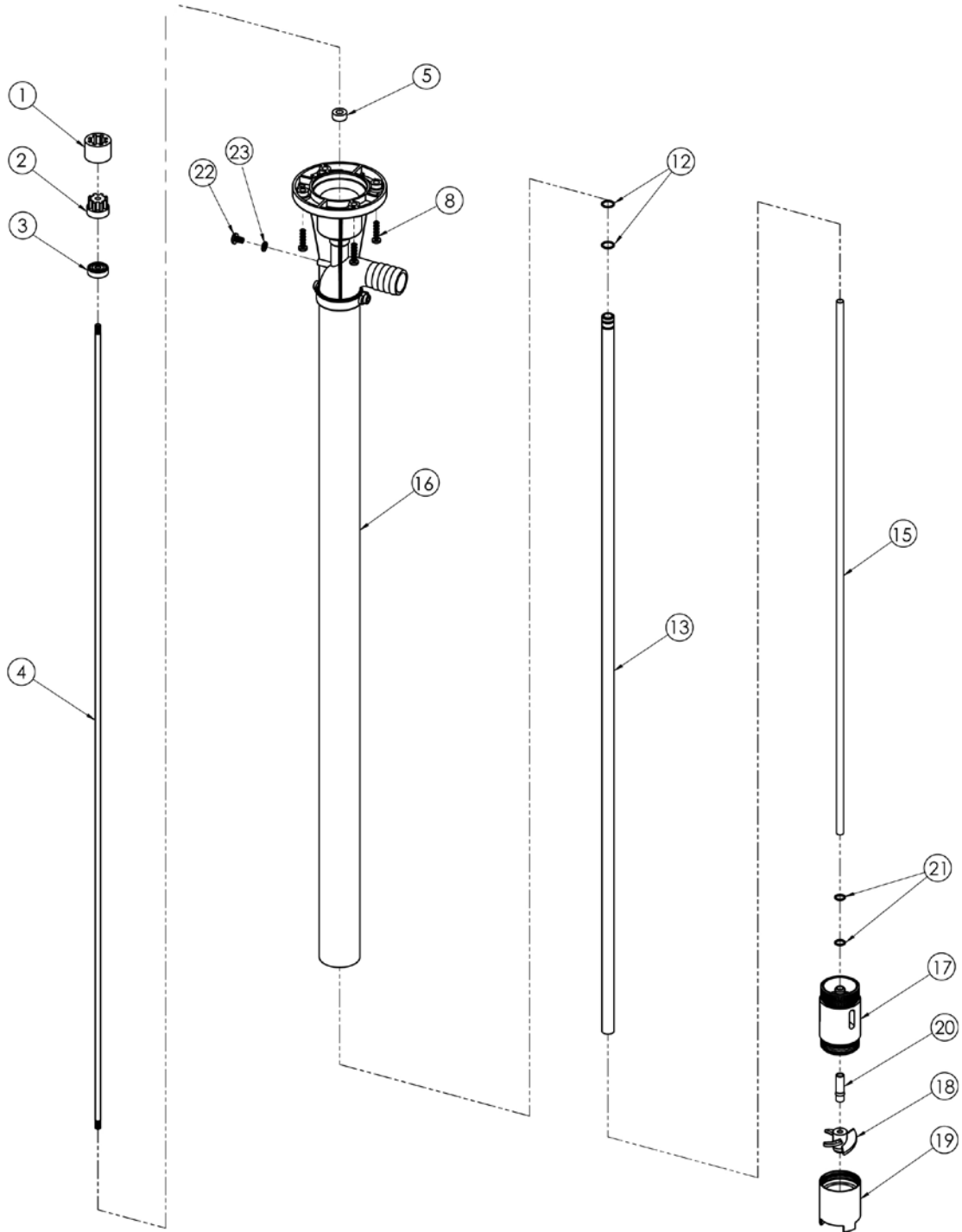


Figure 12

**EXPLODED VIEW
EFP & EFV**



EXPLODED VIEW EFS



PUMP SPARE PARTS LIST

ITEM	QTY	DESCRIPTION	PART NUMBER		
			MODEL EFP	MODEL EFV	MODEL EFS
*1	1	COUPLING INSERT	J103422	J103422	J103422
2	1	COUPLING HALF	107300	107300	107300
3	1	BEARING	SEE NOTE BELOW.		
*2,3,4	1	COUPLING HALF, BEARING & SHAFT - 316 SS - 16"	107589-1	107590-1	107589-1
*2,3,4	1	COUPLING HALF, BEARING & SHAFT - 316 SS - 27"	107589-2	107590-2	107589-2
*2,3,4	1	COUPLING HALF, BEARING & SHAFT - 316 SS - 40"	107589-3	107590-3	107589-3
*2,3,4	1	COUPLING HALF, BEARING & SHAFT - 316 SS - 48"	107589-4	107590-4	107589-4
*5	1	SEAL - FKM	107297	107297	107297
6	1	HEAD - PP	107071-1	N/A	N/A
6	1	HEAD - PVDF	N/A	107071-2	N/A
7	4	FLAT WASHER - SS	J103601	J103601	N/A
8	4	HI-LOW SCREW - SS	J101020	J101020	J101020
*9	1	SPOUT O-RING - FKM	106155	106155	N/A
10	1	SPOUT - PP	107072-1	N/A	N/A
10	1	SPOUT - PVDF	N/A	107072-2	N/A
11	1	NUT - PP	107069-1	N/A	N/A
11	1	NUT - PVDF	N/A	107069-2	N/A
*12	2	INNER TUBE O-RING -FKM	107299	107299	107299
13	1	INNER TUBE - PURE PP or 316SS - 16"	107294-1	107294-1	107578-1
13	1	INNER TUBE - PURE PP or 316SS - 27"	107294-2	107294-2	107578-2
13	1	INNER TUBE - PURE PP or 316SS - 40"	107294-3	107294-3	107578-3
13	1	INNER TUBE - PURE PP or 316SS - 48"	107294-4	107294-4	107578-4
*14	1	CENTER SUPPORT - Tefzel® (ETFE) - 40" & 48" LENGTHS ONLY	107068	107068	N/A
*15	1	SHAFT SLEEVE - PTFE - 16"	107293-1	107293-1	107293-1
*15	1	SHAFT SLEEVE - PTFE - 27"	107293-2	107293-2	107293-2
*15	1	SHAFT SLEEVE - PTFE - 40"	107293-3	107293-3	107293-3
*15	1	SHAFT SLEEVE - PTFE - 48"	107293-4	107293-4	107293-4
16	1	OUTER TUBE - EFP - 16"	107295-1	N/A	N/A
16	1	OUTER TUBE - EFV - 16"	N/A	107295-2	N/A
16	1	OUTER TUBE w / HEAD - EFS - 16"	N/A	N/A	107580-1
16	1	OUTER TUBE - EFP - 27"	107295-3	N/A	N/A
16	1	OUTER TUBE - EFV - 27"	N/A	107295-4	N/A
16	1	OUTER TUBE w / HEAD - EFS - 27"	N/A	N/A	107580-2
16	1	OUTER TUBE - EFP - 40"	107295-5	N/A	N/A
16	1	OUTER TUBE - EFV - 40"	N/A	107295-6	N/A
16	1	OUTER TUBE w / HEAD - EFS - 40"	N/A	N/A	107580-3
16	1	OUTER TUBE - EFP - 48"	107295-7	N/A	N/A
16	1	OUTER TUBE - EFV - 48"	N/A	107295-8	N/A
16	1	OUTER TUBE w / HEAD - EFS - 48"	N/A	N/A	107580-4
*17	1	DIFFUSER - PP	107070-1	N/A	N/A
*17	1	DIFFUSER - PVDF	N/A	107070-2	N/A
*17	1	DIFFUSER - 316SS	N/A	N/A	107583
*18	1	IMPELLER - PP	107067-1	N/A	N/A
*18	1	IMPELLER - TEFZEL® (ETFE)	N/A	107067-2	107067-2
19	1	DIFFUSER COVER - 316SS	N/A	N/A	107584
20	1	DIFFUSER BUSHING - PTFE	N/A	N/A	107585
*21	1	DIFFUSER O-RING - FKM	N/A	N/A	107586
22	1	GROUNDING SCREW - BRASS	N/A	N/A	J100822
23	1	GROUNDING SCREW LOCKWASHER - BRASS	N/A	N/A	J100823
* Recommended Spare Parts					N/A = Not Applicable
Note: Items 3 and 4, Bearing and Shaft, are only available as kits.					



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