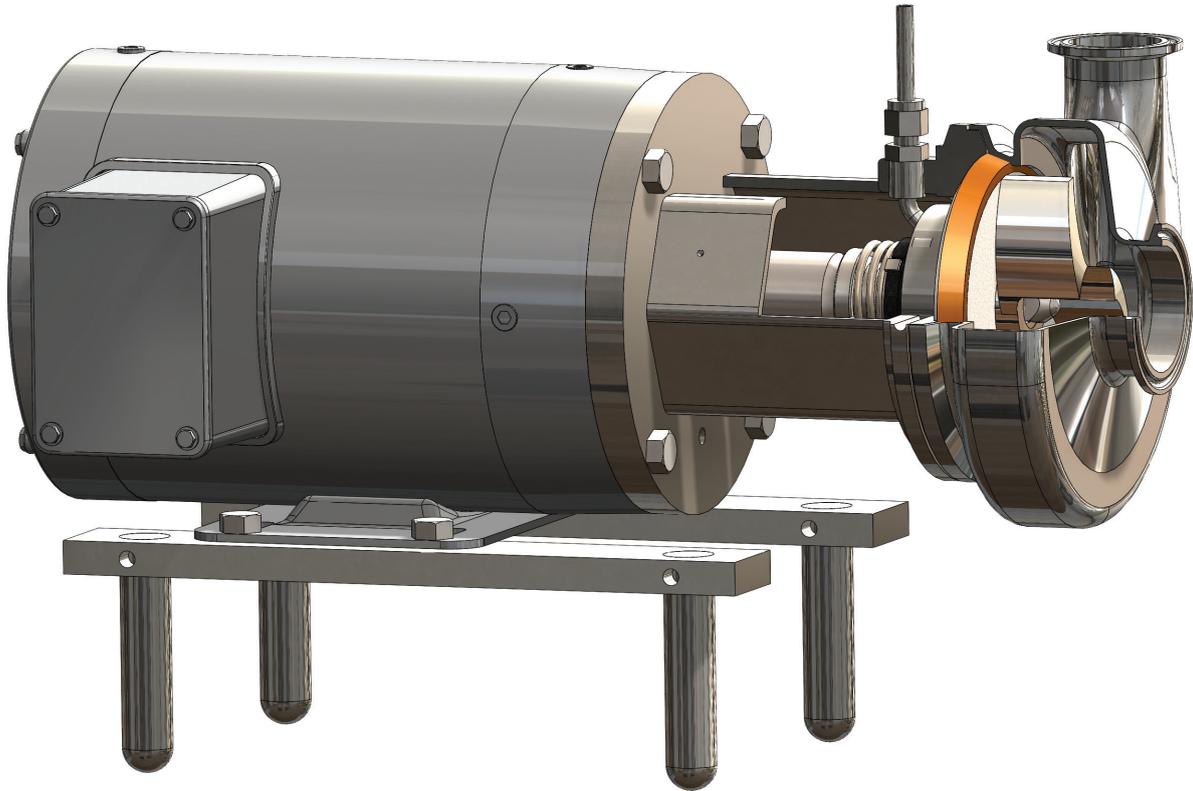


Instruction & Operation Manual

BC/BP-Series Centrifugal Pump



Read and understand this manual prior to installing, operating or servicing this equipment



The Right Connection®

Updated August 2015

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Safety Information

The following DANGER, WARNING and CAUTION signs are contained in this manual.

To avoid serious injury and/or possible damage to equipment, pay attention to these messages.

Hazards or unsafe practices which could result in severe personal injury or death. The word



DANGER is used in the most extreme cases.



Hazards or unsafe practices which could result in minor or moderate injury.

May also be used to alert against an unsafe operating or maintenance practice.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Use only replacement parts and devices recommended by the manufacturer to maintain the integrity of the equipment. Make sure the parts are properly matched to the equipment series, model, serial number and revision level of the equipment.

Safety labels are placed on every pump. Do not remove any labeling on any BC/BP-Series pump. Replace any label that is missing.

DO NOT modify any Dixon Sanitary product. Non-factory modifications could create hazardous conditions and voids all warranties. DO NOT attempt to use a Dixon Sanitary product in any application that exceeds the product rating.

Care of Stainless Steel

The stainless steel components in Dixon Sanitary equipment are machined, welded and assembled by skilled craftsmen using manufacturing methods that preserve the corrosion-resistant quality of the stainless steel.

Retention of corrosion-resistant qualities under processing conditions requires regular attention to the precautions listed below.

1. Regularly check all electrical devices connected to the equipment for stray currents caused by improper grounding, damaged insulation or other defects. Corrosion: Pitting often occurs when stray currents come in contact with moist stainless steel.
2. Never leave rubber mats, fittings, wrenches, etc. in contact with stainless steel. Corrosion: Pitting or galvanic action. Objects retard complete drying, preventing air from reforming the protective oxide film. Galvanic corrosion occurs when two dissimilar metals touch when wet.
3. Immediately rinse equipment after use with warm water until the rinse water is clear. Clean the equipment (manual or CIP) as soon as possible after rinsing. Corrosion: discoloration, deposits, pitting. Product deposits often cause pitting beneath the particles.
4. Use only recommended cleaning compounds. Purchase chemicals from reputable and responsible chemical manufacturers familiar with stainless steel processing equipment, they continuously check the effects of their products on stainless steel.
5. Use cleaning chemicals exactly as specified by the manufacturer. Do not use excessive concentrations, temperatures or exposure times. Corrosion: Pitting, discoloration, stress cracks. Permanent damage often occurs from excessive chemical concentrations, temperatures or exposure times.
6. For manual cleaning, use only soft non-metallic brushes, sponges or pads. Brush with the grain on polished surfaces, avoid scratching the surface. Corrosion: Pitting, scratches. Metal brushes or sponges will scratch the surface and promote corrosion over a period of time. Metal particles allowed to remain on a stainless steel surface will cause pitting.
7. Use chemical bactericides exactly as prescribed by the chemical manufacturer in concurrence with local health authority. Use the lowest permissible concentration, temperature and exposure time possible. Flush immediately after bacterial treatment. In no case should the solution be in contact with stainless steel more than 20 minutes. Corrosion: Protective film destroyed. Chlorine and other halogen bactericides can destroy the protective film. A few degrees increase in temperature greatly increases chemical activity and accelerates corrosion.
8. Regularly inspect the joints in pipelines. Be sure all connections are tight fitting without binding. Corrosion: Crevice corrosion. Small crevices caused by improperly seated gaskets will promote crevice corrosion. Stainless steel under stress will develop stress cracking especially in the presence of bactericides containing chlorine.
9. Regularly inspect equipment for surface corrosion (i.e. pitting deposits, stress cracks, etc.). If deposit or color corrosion is detected, remove it immediately using mild scouring powder and detergents. Rinse thoroughly and allow to air dry. Review production and cleaning procedures to determine the cause. **Note:** If corrosion is not removed, the protective film cannot be restored and corrosion will continue at an accelerated rate.



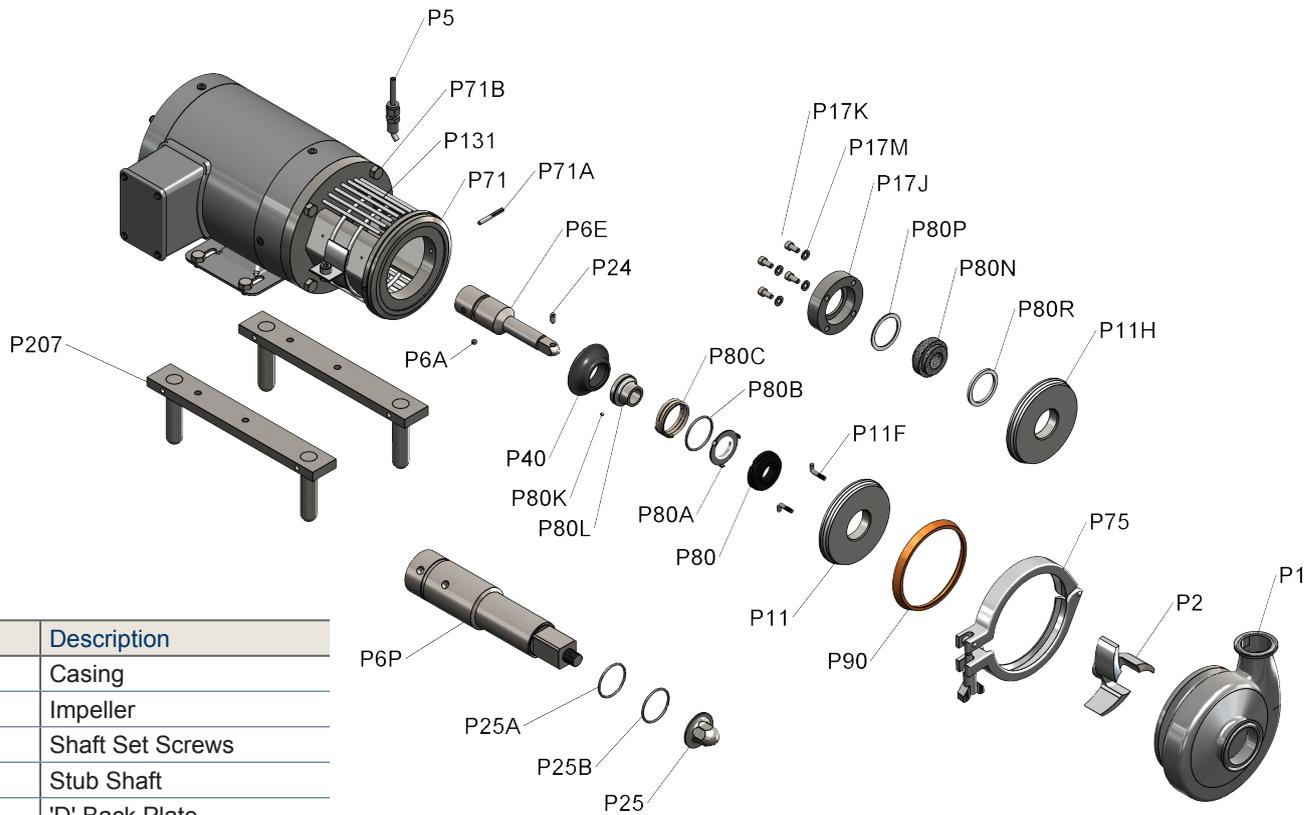
Introduction

This manual contains installation, operation, cleaning, repair instructions, model numbering structure and parts list for the Dixon Sanitary BC/BP-Series centrifugal pumps.

The Dixon Sanitary BC/BP-Series centrifugal pump is made up of two sections, the pump components (fluid end) and the motor assembly. The pump is mounted on the drive motor with an adapter and is coupled to the motor with a stainless steel stub shaft. The pump impeller on the BC-Series is mounted on the stub shaft and is secured with a floating impeller retainer pin. The pump impeller on the BP-Series is secured with a threaded impeller nut.

The casing is joined to the adapter by a heavy duty cast clamp. This design allows the volute outlet to be rotated to various positions.

An adjustable leg kit is an option for mounting the drive motor and is designed to meet sanitary requirements. This configuration simplifies the installation and ease of leveling.



Key No.	Description
P1	Casing
P2	Impeller
P6A	Shaft Set Screws
P6E	Stub Shaft
P11	'D' Back Plate
P11F	Back Plate Pins*
P24	Impeller Retainer
P40	Deflector
P71	Adapter
P71A	Adapter Pins*
P75	Clamp Assembly
P80	Carbon Seal
P80A	Seal Cup
P80B	Seal O'Ring
P80C	Spring
P80K	Seat Screw
P80L	Drive Collar
P90	Casing Gasket
P131	Guard Assembly
P207	Leg Kit

DG Seal

Key No.	Description
P11H	'DG' Back Plate
P17J	Gland Ring
P17K	Gland Bolt
P17M	Washers
P80N	Seal Seat
P80P	Outboard Gasket
P80R	Inboard Gasket

F Seal

Key No.	Description
P5	F Seal Fitting

BP Threaded Impeller Nut

Key No.	Description
P6P	Stub Shaft
P25	Impeller Nut
P25A	Impeller O-ring
P25B	Impeller Nut O-ring

*not used on BC114/214 DG Models

Mechanical Specifications

Standard Construction

- Volute: 316L stainless steel
- Impeller: CF8M (316) stainless steel
- Backplate: 316L stainless steel
- Stub Shaft: 316L stainless steel
- Adapter: 304 stainless steel
- Optional Leg Kit: 304 stainless steel
- Seal Types: externally balanced 'D', 'DG' and 'F' with clamped in seat
- Rotary Seal Material: carbon and silicon carbide
- 'DG' Seal Seat Material: silicon carbide, ceramic and tungsten carbide
- Elastomers: Buna, EPDM, silicone and FKM
- Finish: sanitary polish 32RA

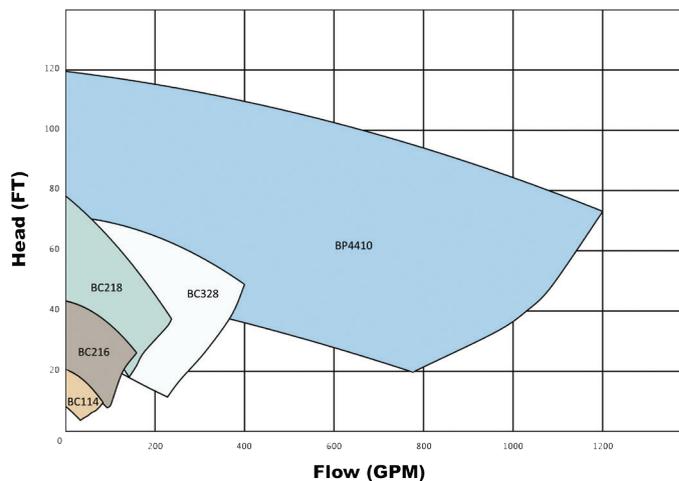
Performance Characteristics

- Nominal Capacity: up to 1200 GPM
- Temperature: 32°F to 212°F, consult Dixon Sanitary for other temperatures
- Nominal speed: up to 3500 RPM - 60 Hz

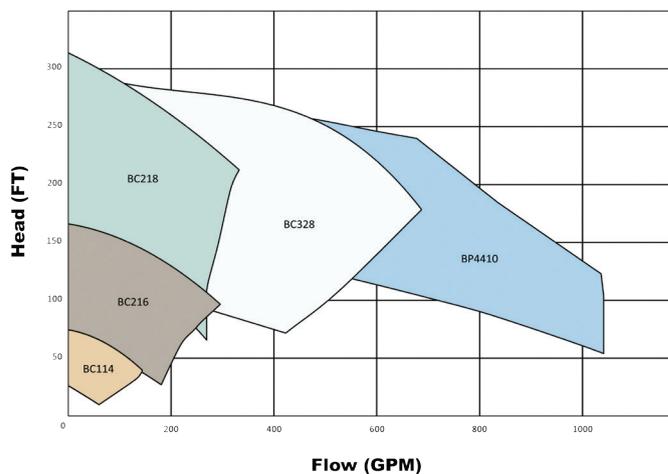
Motors and Mounting

- Motor: standard C-face, 1750 and 3450 RPM, TEFC and washdown, foot mounted
- Additional motor types available upon request
- Mounting: pump head mounted to a C-Face motor

1750 RPM

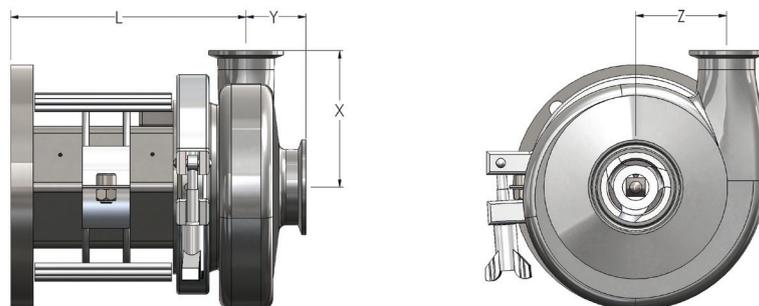


3500 RPM



Dimensions

All dimensions are given in inches



Pump Model	Inlet	Outlet	Z
BC114	1.5	1.5	2.63
BC214	2		
BC216	2	1.5	3.69
BC516	2.5		
BC218	2	1.5	4.75
BC318	3		
BC328	3	2	4.75
BC428	4		
BP441	4	4	7.60
BP641	6		

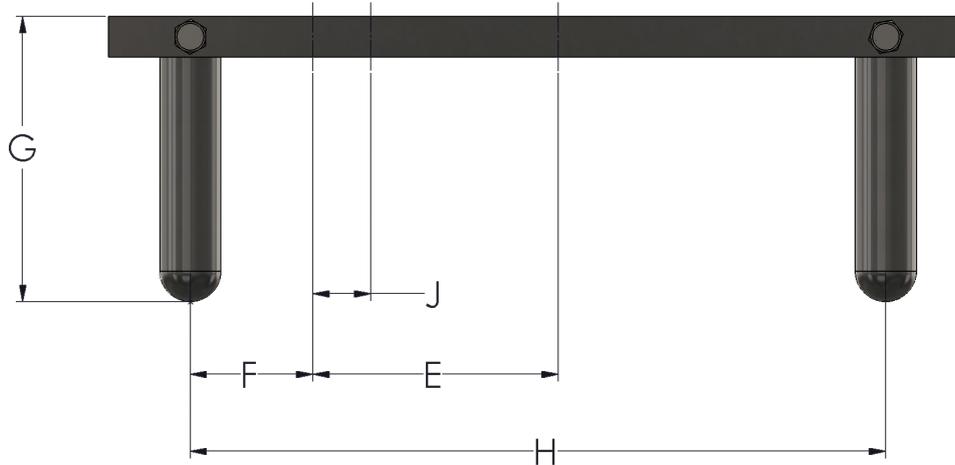
Pump Model	Frame Size	X	Y	L
BC114	56C	3.63	1.63	6.22
	140TC	3.63	1.63	6.22
	180TC	3.63	1.63	6.78
BC216	56C	4.50	1.94	6.06
	140TC	4.50	1.94	6.06
	180TC	4.50	1.94	6.69
	210TC	4.50	1.94	7.81
	250TC	4.50	1.94	8.50
BC218 & BC328	140TC	5.50	1.94 2.25 *	6.31
	180TC	5.50	1.94 2.25 *	6.94
	210TC	5.50	1.94 2.25 *	7.31
	250TC	5.50	1.94 2.25 *	8.19
	280TC	5.50	1.94 2.25 *	8.81
	320TC	5.50	1.94 2.25 *	9.69
BP441 & BP641	210TC	7.35	3.25 5.625**	10.53
	250TC	7.35	3.25 5.625**	10.53
	280TC	7.35	3.25 5.625**	11.16
	320TC	7.35	3.25 5.625**	10.53

* only applies to the BC328

** only applies to the BP641

Dimensions

All dimensions are given in inches



Frame Size	E	F	G	H	J
56C	3.00	1.50	3.50	8.50	NA
140TC	5.00	1.50	3.50	9.50	1.00
180TC	5.50	1.50	3.50	10.63	1.00
210TC	7.00	1.50	3.50	13.88	1.50
250TC	10.00	1.50	3.50	18.00	1.75
280TSC	11.00	1.50	3.50	19.00	1.50
320TSC	12.00	1.50	3.50	20.50	1.50

All dimensions are approximate;
for exact dimensions contact Dixon Sanitary

BC-Series Installation

Unpacking

Carefully unpack all parts of the pump and inspect for damages that may have occurred during shipment. Report any damages to the carrier immediately.

The ports on the pump are protected with a plastic cover. If any covers are missing or damaged, inspect the ports on the pump thoroughly for any damage.

Tools Needed

If you have purchased a fluid end and will be assembling the pump to a motor the following tools will most likely be used:

- Flat head screw driver
- Open ended wrenches
- Calipers
- Rubber mallet
- Allen wrenches
- Feeler gauge
- Pliers

'D' Seal Pump Assembly

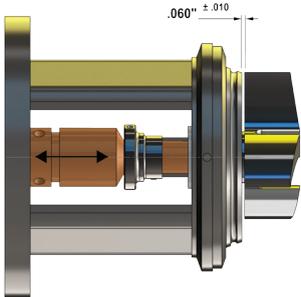


Figure No. 1

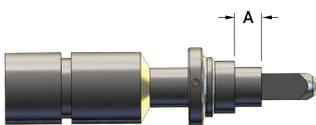


Figure No. 2

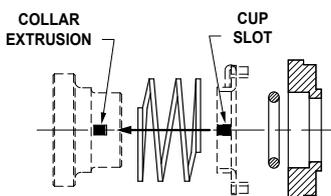


Figure No. 3

1. Install the adapter onto the motor using (4) bolts and (4) lock washers. Position the adapter such that the threaded seal flush adapter hole is located on the top.
2. Install adapter pins by tapping the knurled end into the holes until flush with the outside diameter of the adapter face.
3. Stub shaft alignment:
 - a. Make sure that the key is in the motor shaft, then slide stub shaft onto motor shaft. Do not tighten set screws.
 - b. Set back plate on adapter face.
 - c. Slide impeller onto stub shaft end.
 - d. Using feeler gauge between back plate and impeller position stub shaft so that the gap is equal to $.060'' \pm .010''$. (see figure no.1)
 - e. Tighten set screws on stub shaft.
 - f. Remove impeller and back plate.
4. Slide deflector over shaft large end first until it locks into position at the base of the stub shaft.
5. Slide drive collar large end first over the stub shaft. Position collar and set dimension 'A' to 0.6". (see figure no.2)
6. Tighten collar set screws.
 - a. Place seal spring over stub shaft and down onto the drive collar.
 - b. Place cup on top of the spring with slot lining up with extrusion on drive collar.
 - c. Place seal o-ring into the back of the carbon seal and slide the seal o-ring assembly onto stub shaft, lining the notches in the carbon seal up with the pins on the cup.
 - d. Check to make sure that slot in cup is still aligned with the extrusion in the drive collar. (see figure no.3)

continued on next page ...

BC-Series Installation

'D' Seal Pump Assembly

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7. Screw back plate pins into back plate. (see figure no.4)
8. Position casing gasket on circumference of the back plate.
9. Check that both the seal face on the back plate and the seal face of the carbon seal are completely clean. Even the oils from your skin are not acceptable on these two surfaces. Clean faces thoroughly with a clean, lint free cloth.
10. Assemble back plate to adapter.
 - a. Place the back plate assembly onto the adapter. Put even pressure down on the back plate until it is completely seated on the adapter. (see figure no.5)
 - b. Check that the drive collar extrusion is fully engaged in the slot on the cup.
 - c. Rotate the back plate so that the back plate pins engage the adapter pins, holding it in place.
 - d. With back plate depressed completely to the adapter, inspect the spring to insure there is some space between the coils. If the coil is too tight, repeat step 5 and add 0.05" to dimension 'A' and re-check spring coil. Repeat if necessary.
11. Install the impeller.
 - a. Insert the impeller retainer into the hole near the end of the stub shaft so that it is centered in the shaft.
 - b. Slide the impeller onto the stub shaft.
 - c. Using a small hex key or screw driver push the impeller retainer so that it is sticking out one end as far as it will allow, thus locking the impeller into place.
12. Close and seal the pump.
 - a. Place volute onto assembly with discharge outlet pointing in the desired position.
 - b. While applying sufficient pressure to bring adapter and volute together put on and tighten clamp.
13. Attach and tighten guard assembly making sure that the seal flush tab on the adapter lines up with the indent on the corresponding side of the guard.

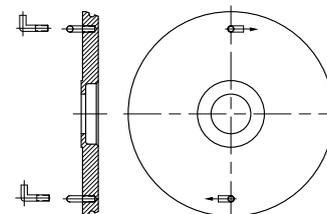


Figure No. 4

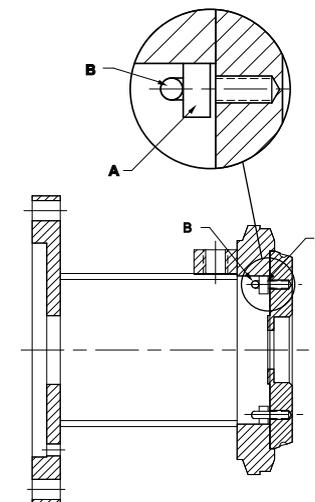


Figure No. 5



Scan this code on your smart phone to visit the YouTube video for detailed assembly instructions

Click here to visit the YouTube assembly video for D Seal Pumps

BC-Series Installation

'DG' Seal Pump Assembly

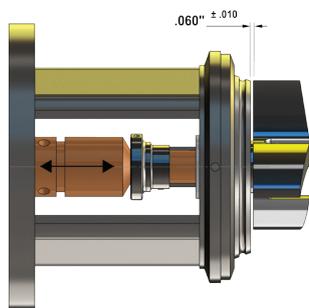


Figure No. 6



Figure No. 2

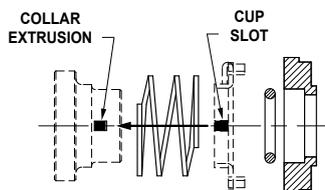


Figure No. 7



Figure No. 8

1. Install the adapter onto the motor using (4) bolts and (4) lock washers. Position the adapter such that the threaded seal flush adapter hole is located on the top. For BP441 and 641 models add adapter pins.
2. Stub shaft alignment:
 - a. Make sure that the key is in the motor shaft, then slide stub shaft onto motor shaft. Do not tighten set screws.
 - b. Set back plate on adapter face.
 - c. Slide impeller onto stub shaft end.
 - d. Using feeler gauge between back plate and impeller position stub shaft so that the gap is equal to $.060'' \pm .010''$. (see figure no.6)
 - e. Tighten set screws on stub shaft.
 - f. Remove impeller and back plate.
3. Slide deflector over shaft large end first until it locks into position at the base of the stub shaft.
4. Slide drive collar large end first over stub shaft until it will not slide any further. For BP441 and 641 models, position collar and set dimension 'A' to 1.65". (See figure no. 2)
5. Tighten collar set screws.
 - a. Place seal spring over stub shaft and down onto the drive collar.
 - b. Place cup on top of the spring with slot lining up with extrusion on drive collar. (see figure no.7)
 - c. Place seal o-ring into the back of the carbon seal and slide the seal o-ring assembly onto stub shaft, lining the notches in the carbon seal up with the pins on the cup.
 - d. Check to make sure that slot in cup is still aligned with the extrusion in the drive collar. (see figure no.7)
6. Assemble 'DG' seal back plate. (see figure no.8)
7. Position casing gasket on circumference of the back plate.
8. Check that both the seal face on the back plate and the seal face of the carbon seal are completely clean. Even the oils from your skin are not acceptable on these two surfaces. Clean faces thoroughly with a clean, lint free cloth.
9. Assemble back plate to adapter.
 - a. Place the back plate assembly onto the adapter. Put even pressure down on the back plate until it is completely seated on the adapter.
 - b. Check that the drive collar extrusion is fully engaged in the slot on the cup.
10. Install the impeller.
 - a. Insert the impeller retainer into the hole near the end of the stub shaft so that it is centered in the shaft.
 - b. Slide the impeller onto the stub shaft.
 - c. Using a small hex key or screw driver push the impeller retainer so that it is sticking out one end as far as it will allow, thus locking the impeller into place.
11. Close and seal the pump.
 - a. Place volute onto assembly with discharge outlet pointing in the desired position.

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BC-Series Installation

'DG' Seal Pump Assembly

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- b. While applying sufficient pressure to bring adapter and volute together put on clamp. Wing nut tightened to 25 in. lb. of torque. For PB441 & 641 models with bolted clamp, all nuts are tightened to 20 ft. lb. of torque.
12. Attach and tighten guard assembly making sure that the seal flush tab on the adapter lines up with the indent on the corresponding side of the guard.



Scan this code on your smart phone to visit the YouTube video for detailed assembly instructions

Click here to visit the YouTube assembly video for BC-series pumps with DG seals

BP-Series Impeller Installation

D-Seal

Replace Step 11 on page 9 with the following:

11. Install the impeller.*
- a. Slide the impeller onto the stub shaft.
 - b. Place the impeller nut O-ring onto the stub shaft.
 - c. Thread the impeller nut and torque as per the ratings.

*For 441/641 models

- a. Place the impeller O-ring onto the stub shaft.
- b. Slide the impeller onto the stub shaft.
- c. Place the impeller nut O-ring onto the stub shaft.
- d. Thread the impeller nut and torque as per the ratings.

DG-Seal

Replace Step 10 on page 10 with the following:

10. Install the impeller.*
- a. Slide the impeller onto the stub shaft.
 - b. Place the impeller nut O-ring onto the stub shaft.
 - c. Thread the impeller nut and torque as per the ratings.

*For 441/641 models

- a. Place the impeller O-ring onto the stub shaft.
- b. Slide the impeller onto the stub shaft.
- c. Place the impeller nut O-ring onto the stub shaft.
- d. Thread the impeller nut and torque as per the ratings.

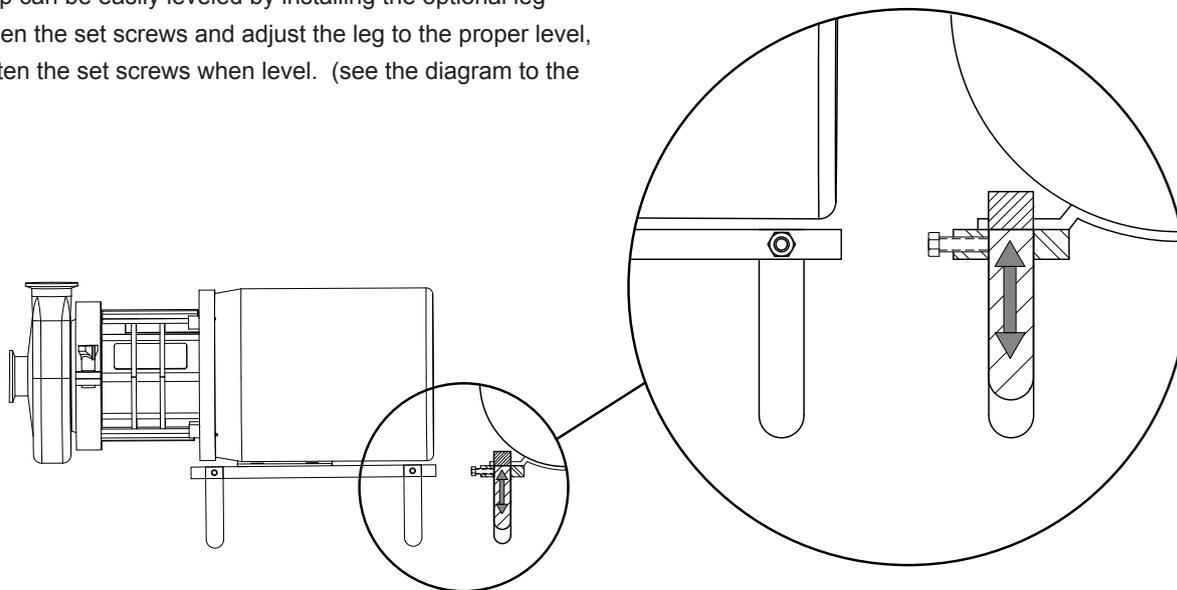
BP-Series Threaded Impeller Nut Torque Ratings

Pump Model	In Lbs.
114	100
216	210
218/328	350
4410	450

BC-Series Installation

Optional Leg Kit Installation and Leveling

The pump can be easily leveled by installing the optional leg kit. Loosen the set screws and adjust the leg to the proper level, then tighten the set screws when level. (see the diagram to the right)



Scan this code on your smart phone to visit the YouTube video for detailed assembly instructions

Click here to visit the YouTube installation video for the BC-Series pump optional leg kit

Location

- Pump will perform at its best when located as close as possible to the liquid supply.
- Supply piping should be short and straight to insure the pump has an adequate supply of liquid to it at all times.
- The pump should be located in an area where it is easy to inspect, do preventative maintenance or repair.
- Motor must be in area where it will not be flooded.

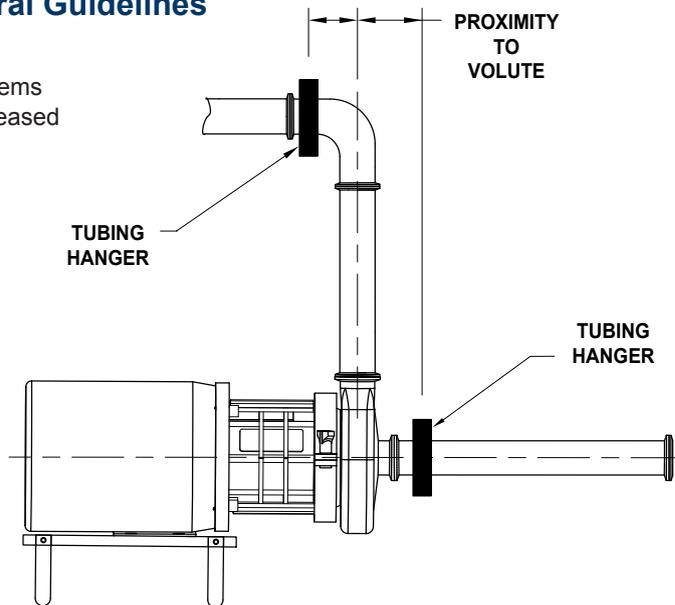
Installation

Piping: General Guidelines



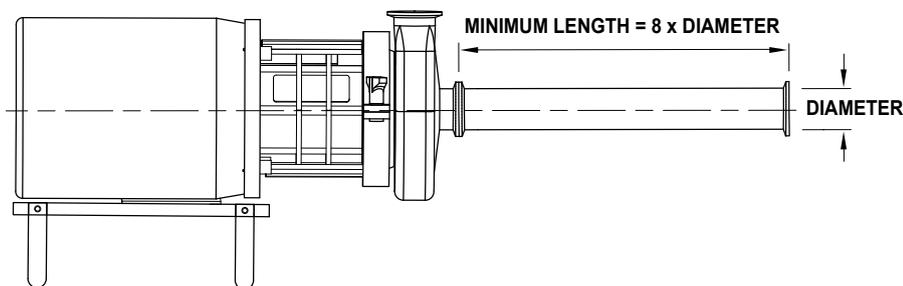
Improper piping can lead to a number of problems with pump performance which will lead to increased maintenance costs.

- Insure piping is independently supported at both the suction and discharge ports of the pump.
(see the diagram to the right)
- Piping must be properly aligned to prevent any strain on pump volute.
- Try to have as few bends as possible in all piping.



Piping: Suction Guidelines

- Make sure line sizes used are equal to or larger than suction side (supply side) port connections on pump.
- Suction side needs to be short and straight as possible. Any restrictions will affect the NPSHa. Adequate NPSHa must be insured.
- Maintain a straight length of pipe at a minimum of 8 x diameters long at the pump inlet.
(see the diagram below)



- To prevent air leaks, insure all joints in suction line are well sealed.

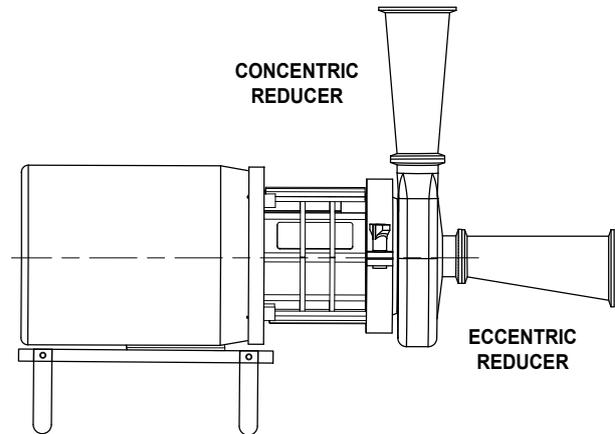
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Installation

Piping: Suction Guidelines

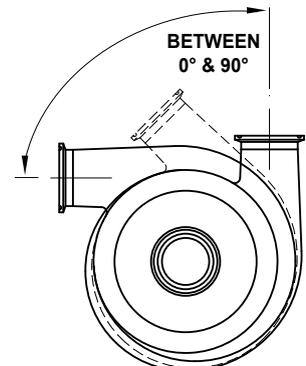
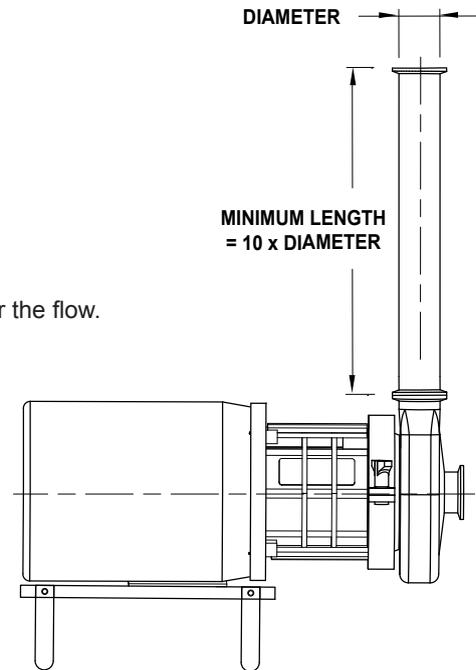
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- Use an eccentric reducer with straight side up to prevent air pockets from forming which will result in a decrease in pump efficiency.
(see the diagram to the right)
- To prevent a high point in the suction line resulting in an air pocket being formed affecting proper pump performance, horizontal suction pipes must have a gradual rise to the pump.



Piping: Discharge Guidelines

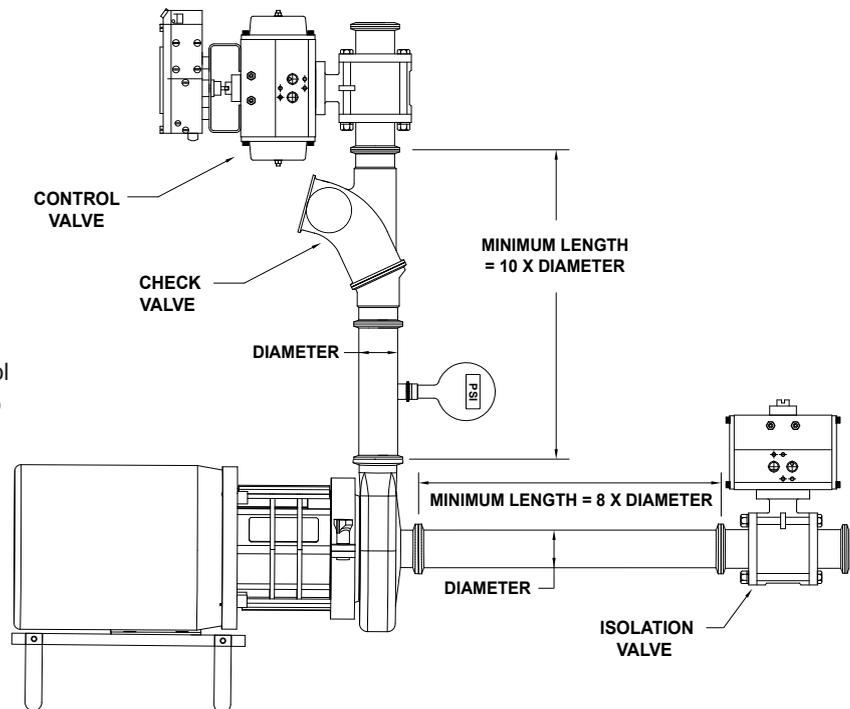
- Discharge side should be short and direct. Use a minimal number of restrictions.
(see the diagram to the right)
- Vertical or top horizontal pump discharge position is preferred.
(see the diagram at the bottom)
- While increasing the discharge side line size is recommended, please note:
 - > Using too large of a line size will lead to pump overload.
 - > Using a smaller than recommend line size will increase the pump head but lower the flow.
- Types of reducers to use:
 - > If vertical discharge – concentric
 - > If horizontal discharge – eccentric with straight side down



Installation

Piping: Valve location

- An isolation valve should be installed at both the suction and discharge sides of the pump. This will allow you to remove the pump for preventative maintenance or repair without the need to drain your system.
(see the diagram to the right)
- If pump is not in a flooded suction condition, install either a foot valve or system check valve to insure pump volute is flooded for priming.
- In order to provide pump flow rate control, a control valve should be installed in the discharge piping to prevent motor overload.

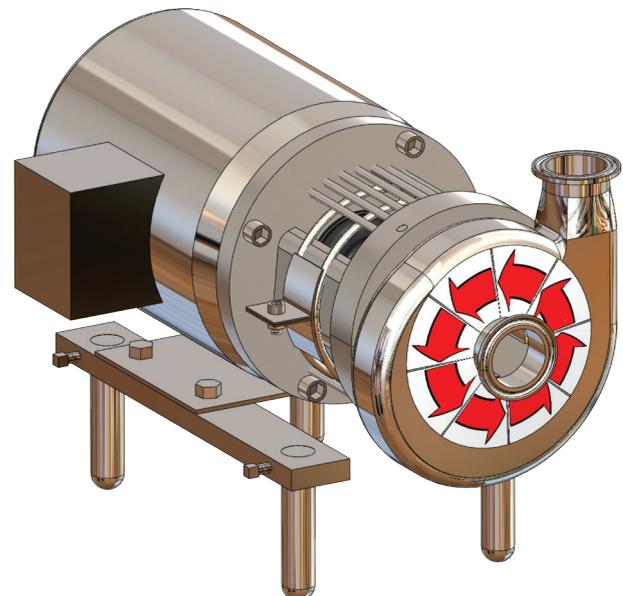


Electrical

WARNING

All power must be off and locked out during the installation process. Only registered electricians should do the electrical installation.

- Follow motor manufacturer's installation procedures.
- Verify motor nameplate data is compatible with existing electrical supply.
- Verify pump rotation. An arrow sticker is supplied with every pump to show correct pump rotation. If the arrow stickers are missing, contact Dixon Sanitary for a replacement.
- Correct rotation is counter clockwise when facing pump inlet connection.



Operation

Priming the Pump



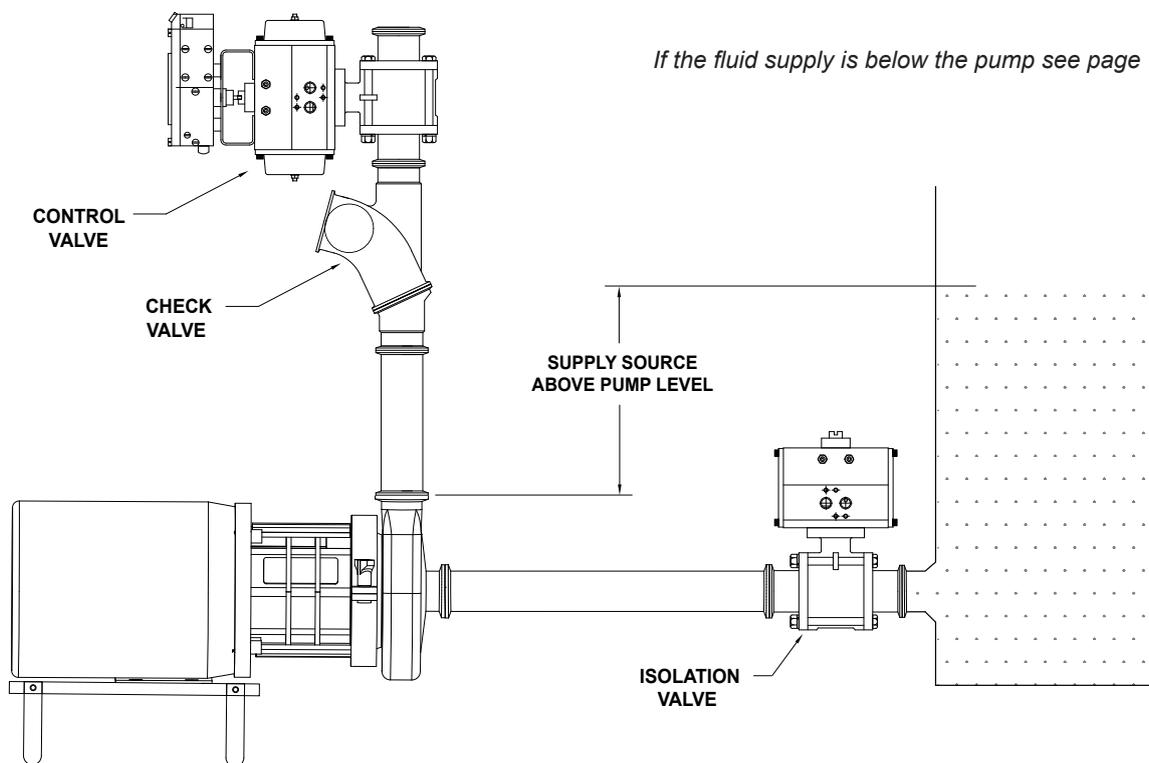
To avoid damage to the pump, the pump casing must be flooded with liquid BEFORE starting the pump.

Note: This is not a self priming pump. Other means must be installed to prime the pump.

Fluid supply above the pump:

1. Open supply line isolation valve.
2. Vent any entrapped air by opening the discharge valve.
3. After volute is flooded, start pump.

If the fluid supply is below the pump see page 17.



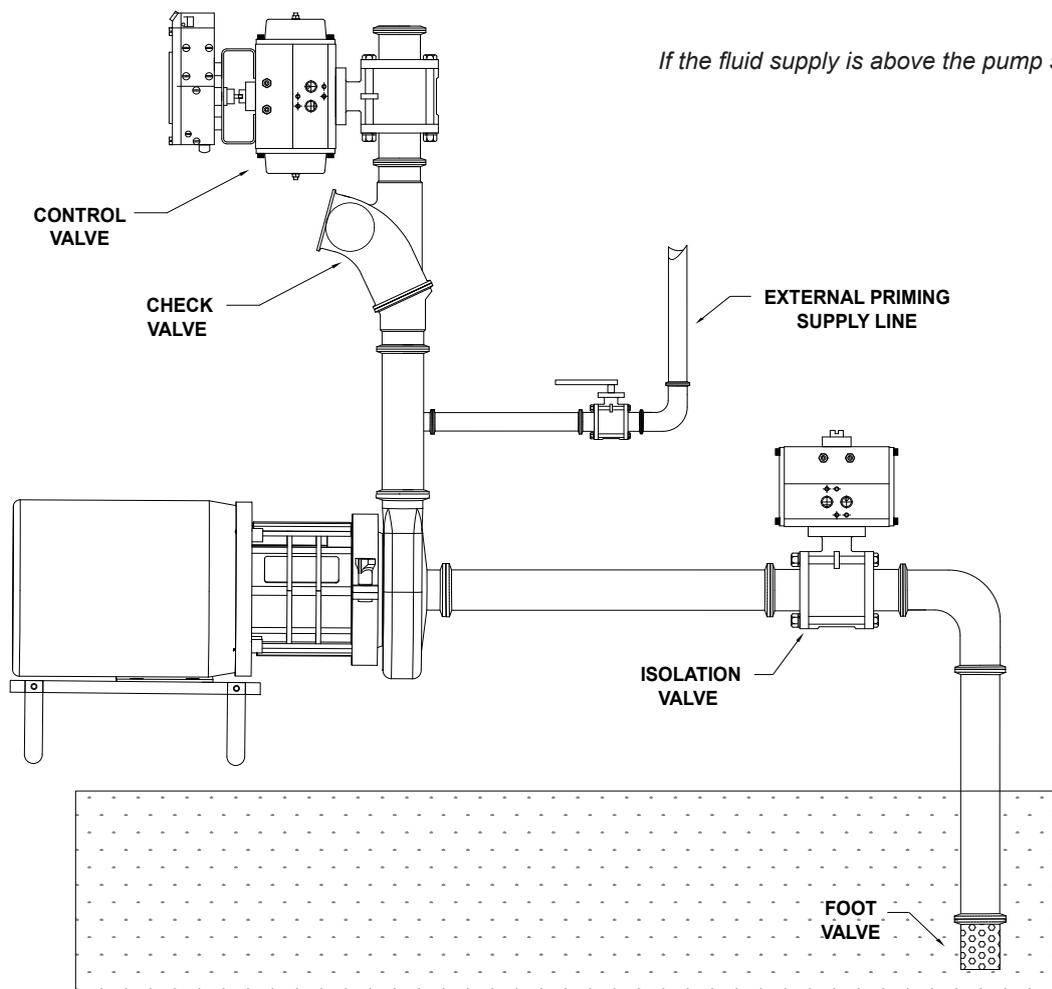
Operation

Priming the Pump

Fluid supply below the pump:

1. Close discharge valve and open air vents.
2. Open valve in external priming supply line. Close once liquid flows from vent valves.
3. Close vent valves.
4. Turn off priming supply line.
5. Start pump.

If the fluid supply is above the pump see page 16.



Note: It is recommended to use a foot/check valve system to keep the pump primed. Otherwise the pump must be primed before each operation.

Operation

Starting the Pump

1. Insure pump suction is flooded using either method as explained in the previous priming section.
2. Check for any closed valves or obstructions in the suction and discharge lines.
3. Start the motor.
4. Verify liquid is flowing and there is no piping connection or mechanical seal leaks.
5. Adjust throttling valve on discharge line to desired flow.

Stopping the Pump

1. Shut off power to motor.
2. Suction and discharge valves are to be shut off.
Be advised the pump does not act as a shut off valve. The liquid will flow freely though the pump.

Maintenance

Scheduled Maintenance

Preventative maintenance will increase the life of your pump. Documentation of any maintenance will help to diagnose potential problems and help in determining solutions.

Scheduled maintenance will require disassembly of the pump and the following:

- | | | |
|---|--|---|
| <ol style="list-style-type: none">1. Inspect casing for:<ul style="list-style-type: none">• Unusual wear• Damage to ports2. Inspect casing gasket for<ul style="list-style-type: none">• Wear• Damage3. Inspect impeller for<ul style="list-style-type: none">• Unusual wear• Damage | <ol style="list-style-type: none">4. Inspect mechanical seal for wear5. Inspect shaft for<ul style="list-style-type: none">• Straightness• Tightly installed | <p>6. BP- Series</p> <p>Whenever the impeller nut (P25 is removed, replace the two O-rings (P25A and P25B). Inspect the threads in the impeller nut and on the end of the stub shaft (P6P). If there is any evidence of soil or dirtied appearance, completely disassemble the stub shaft and nut. Clean all the threads and surfaces of the shaft and nut by manual brushing in a bath of cleaning solution (Acid detergents or simple alkaline soda type detergents). After cleaning, rinse the shaft and nut thoroughly with water.</p> |
|---|--|---|

Monitor pump throughout its use for any of the following problems: see troubleshooting guide on pages 21-22, for possible solutions.

- | | |
|--|---|
| <ul style="list-style-type: none">• Unusual pump or motor noise• Excessive vibration• Seal leakage• Piping leaks at ports | <ul style="list-style-type: none">• Unexpected change in flow or head• Temperature changes• Excessive power consumption• Overheating motor |
|--|---|

Maintenance

Disassembly & Inspection

1. Turn off and lock out power to pump motor.
2. Isolate pump from system.
3. Relieve system pressure.
4. Remove suction and discharge lines from volute.
5. Remove seal guard assembly.
6. Loosen clamp assembly and remove.
7. Remove casing and inspect for unusual wear or port damage.
8. For BC-Series push back impeller and center impeller retainer in the stub shaft. For BP-Series remove impeller nut and O-ring.
9. Remove impeller and inspect for unusual wear or damage.
10. Remove impeller retainer.
11. Rotate back plate to disengage from adapter pins and remove.
12. See seal removal and inspection instructions on page 20.
13. Inspect shaft to insure straightness and that it is fastened securely to the motor shaft.
14. If stub shaft needs to be removed, remove deflector first.
15. If necessary remove stub shaft by loosening the two (2) set screws. If the shaft does not remove easily, use a pry bar on the periphery of the base of the shaft.



Scan this code on
your smart phone to
visit the YouTube
video for
BC-Series Disassembly D-Seal

***Click here to visit the YouTube
disassembly video for BC-Series pumps
with D seals***



Scan this code on
your smart phone to
visit the YouTube
video for
BC-Series Disassembly DG-Seal

***Click here to visit the YouTube
disassembly video for BC-Series pumps
with DG seals***

Maintenance

Seal Maintenance & Repair

See page 19 for disassembly instructions.

'D' Seal

1. When removing back plate inspect the stationary seal seat area for wear and/or damage. Depending upon the extent of wear, the back plate may need to be resurfaced or replaced.
2. Remove the carbon seal, O-ring, cup and spring.
3. Inspect carbon seal. Replace carbon seal if "A" dimension is less than 1/32". (see the diagram to the right)
4. If carbon seal is replaced, drive collar setting should be verified and adjusted as needed.



'DG' Seal

1. When removing back plate inspect for any nicks or scratches.
2. Remove the four (4) bolts from the gland assembly.
3. Inspect 'DG' seal seat. This is a reversible part and if there is wear on one side you can flip it to the other side until that side is worn.
4. Inspect gland ring and gaskets. Replace as needed.
5. Remove the carbon seal, O-ring, cup and spring.
6. Inspect carbon seal. Replace carbon seal if "A" dimension is less than 1/32". (see the diagram to the right)

Return to disassembly instructions on page 19.



Scan this code on your smart phone to visit the YouTube video for **BC-Series Repair Kit #1**

Click here to visit the YouTube instruction video for the BC-Series pump Repair Kit # 1



Scan this code on your smart phone to visit the YouTube video for **BC-Series Repair Kit #3**

Click here to visit the YouTube instruction video for the BC-Series pump Repair Kit #3



Scan this code on your smart phone to visit the YouTube video for **BC-Series Repair Kit #4**

Click here to visit the YouTube instruction video for the BC-Series pump Repair Kit #4



Scan this code on your smart phone to visit the YouTube video for **BC-Series DG Repair Kit**

Click here to visit the YouTube instruction video for the BC-Series pump DG Repair Kit

Troubleshooting

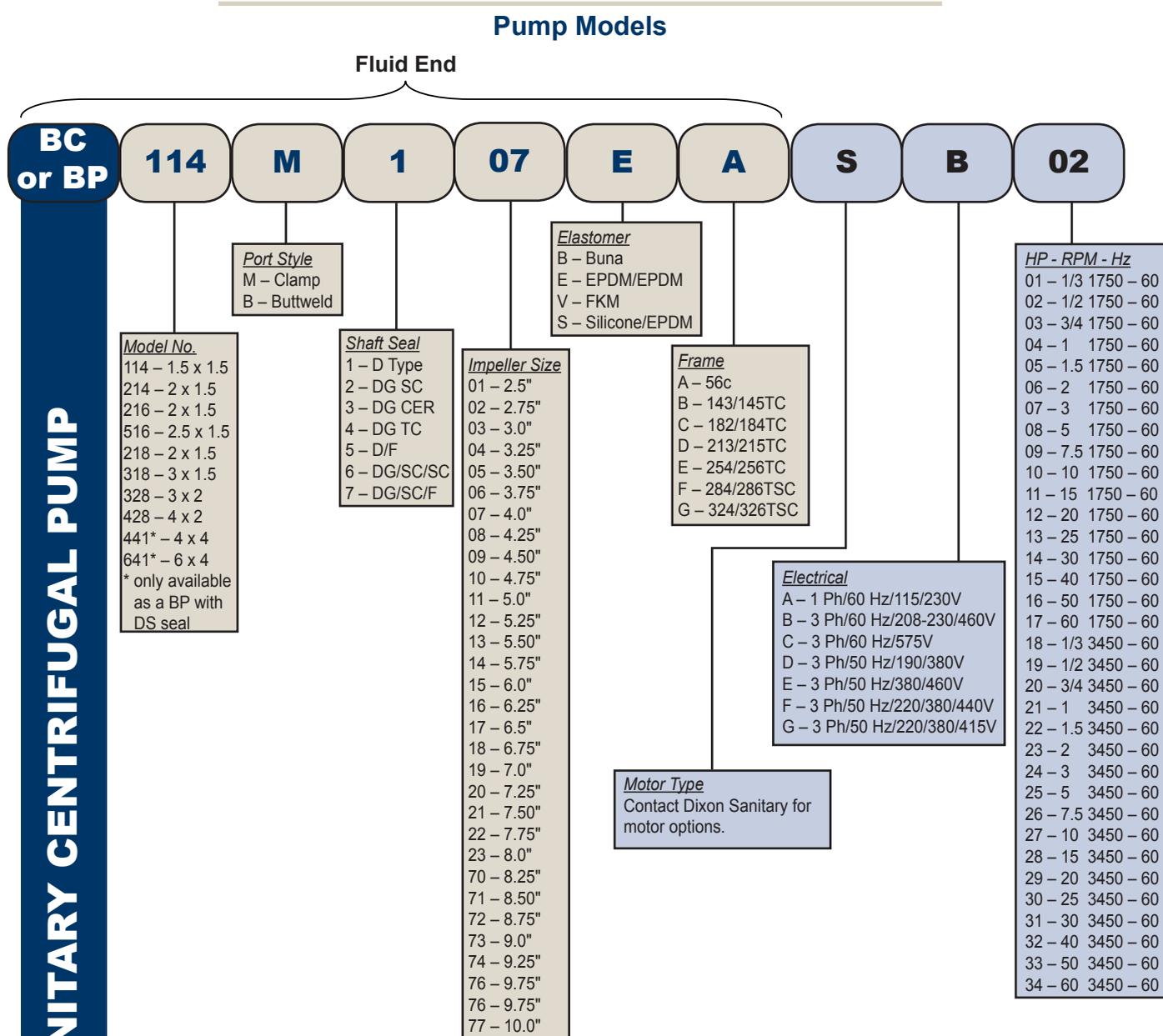
Dixon Sanitary BC-Series pumps are manufactured and inspected to meet sanitary standards. Occasional problems may arise. The following guide will help determine the possible cause and offer suggestions on corrections to maximize the performance of your pump. In case of any electric motors issues, contact the motor manufacturer directly. If you have any questions or concerns in regards to your BC-Series pump, we encourage you to contact Dixon Sanitary.

PROBLEM	POSSIBLE CAUSE	SUGGESTED ACTION
Not enough or no discharge	No fluid reaching pump.	Need to prime pump. Installation of a priming system is recommended.
	Suction or discharge closed or blocked.	Open suction. If plugged, shutdown pump and remove blockage. If closed, check all valves for proper positions.
	Motor rotation incorrect.	Adjust motor electrical wiring to correct rotation.
	Speed too slow (low voltage, wrong frequency, wrong motor).	Adjust voltage and frequency. Change motor if necessary.
	Impeller damaged.	Replace impeller.
	Seal area or supply area has an air leak.	Replace seal if needed. Check all other areas for air leaks and repair.
	Excessive air in material.	Make any adjustments in system to insure excess air is removed before material reaches the pump.
	Discharge head too high.	Adjust system to lower discharge head.
	Suction lift too high.	Adjust system to lower suction lift.
	Insufficient NPSH (Net Positive Suction Head) available.	Adjust system to provide correct NPSHa.
	Impeller diameter not correct for application.	Contact: Dixon Sanitary 800-789-1718
Not Enough Pressure	Seal area or supply area has an air leak.	Replace seal if needed. Check all other areas for air leaks and repair.
	Motor rotation incorrect.	Adjust motor electrical wiring to correct rotation.
	Speed too slow (low voltage, wrong frequency, wrong motor).	Adjust voltage and frequency. Change motor if necessary.
	Excessive air in material.	Make any adjustments in system to insure excess air is removed before material reaches the pump.
	Impeller diameter not correct for application.	Contact: Dixon Sanitary 800-789-1718
Motor Overload/Excessive Power Consumption	Discharge is too high.	Restrict discharge to lower flow rate.
	Impeller is binding.	Inspect pump and check for any damage, misalignment or interference. Replace any damaged or worn parts.
	Seal binding.	Inspect pump and replace any damaged or worn parts.
	Discharge is too low.	Increase discharge head.
	Liquid is heavier or more viscous than rating.	Contact: Dixon Sanitary 800-789-1718
	Electrical supply, voltage or frequency incorrect.	Make any adjustments needed up to replacing the motor.
	Faulty electrical connections.	Check wiring and repair/replace as necessary.
	Overload heaters too small.	Inspect and replace as necessary.
Defective motor.	Contact motor manufacturer for possible warranty or repair. Replace if needed.	

Troubleshooting

PROBLEM	POSSIBLE CAUSE	SUGGESTED ACTION
Excessive Vibration/Pump is Noisy	Pump not level.	Inspect installation of pump and correct level.
	Non-supported piping.	Verify piping support follows recommendations in installation portion of this manual.
	Not enough or no material reaching pump.	Inspect pump to verify there is no blockage. Inspect suction line and shorten or enlarge.
	Insufficient NPSH (Net Positive Suction Head) available.	Adjust system to provide correct NPSHa.
	Impeller and/or shaft worn.	Replace worn parts.
	Shaft loose or bent.	Readjust shaft settings, tighten shaft screws if loose. If bent, replace shaft and inspect impeller hub for uneven wear, replace impeller if worn.
	Impeller out of balance.	Inspect shaft if loose or bent. If impeller damaged, replace.
	Foreign material in pump.	Remove any foreign material and replace any worn or damaged parts.
	Excessive air in material.	Make any adjustments in system to insure excess air is removed before material reaches the pump.
Rapid Seal Wear	Motor bearings worn.	Replace any worn parts or replace motor if needed.
	Improper installation of mechanical seal.	Adjust mechanical seal installation. Replace any worn or damaged parts.
	Dry running.	Material must be in contact with seal at all times. Catastrophic failure will occur.
	Abrasive product.	Contact: Dixon Sanitary 800-789-1718
	Shaft loose or bent.	Readjust shaft settings, tighten shaft screws if loose. If bent, replace shaft and inspect impeller hub for uneven wear, replace impeller if worn.
	Water hammer.	Correct system to prevent any quick starts and stops.
Pump Leaks	Improper seal for application.	Contact: Dixon Sanitary 800-789-1718
	Inlet/Outlet	Inspect for missing union gaskets, loose connections or damaged ports. Replace worn gaskets and tighten loose connections. Damaged ports repair or replace.
	Casing clamp loose.	Tighten clamp.
	Casing gasket damaged or worn.	Replace gaskets.
	Seal not installed correctly.	Reassemble seal properly. Replace any worn or damaged parts.
	Carbon seal worn or damaged.	Replace any worn or damaged parts.
Any Other Issue	'D' seal back plate worn.	Resurface or replace. "DG" option should be considered.
		Contact: Dixon Sanitary 800-789-1718

Model No.'s & Part No.'s



DIXON SANITARY CENTRIFUGAL PUMP

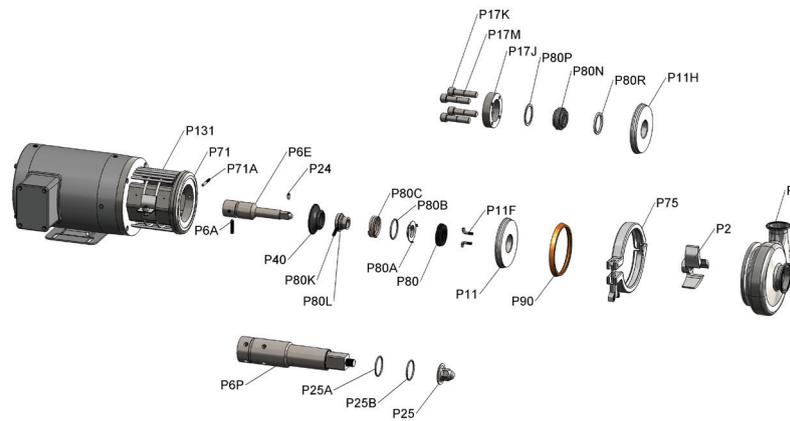
Fluid end includes all parts required to assemble to your motor.

Specify adjustable leg kits at time of order. Leg kits will be shipped to match the frame size of motor as specified by model number. Leg kits will not be assembled.

Please note, if there are options that are not listed above, please contact Dixon Sanitary (800.789.1718) for availability and pricing.

Model No.'s & Part No.'s

Part Number Key



Common Parts

Key No.	Description	BC114	BC216	BC218	BC328	BP441
		Part Number	Part Number	Part Number	Part Number	Part Number
P1	Casing Clamp	P1-114M	P1-216M	P1-218M	P1-328M	P1-441M
P1	Casing Clamp Enlarged	P1-214M	P1-516M	P1-318M	P1-428M	P1-641M
P2	Impeller	P2-114-400	P2-216-600	P2-218-800	P2-328-800	P2-441-1000
P6A	Stub Shaft Set Screw	P6A-114SS	P6A-216BSS	P6A-216BSS	P6A-216BSS	P6A-441SS
P11	Back Plate (D Seal)	P11-114DP	P11-216DP	P11-218BDP	P11-218BDP	N/A
P11F	Back Plate Pin	P11F-114BPP	P11F-114BPP	P11F-114BPP	P11F-114BPP	P11F-441PP
P11H	Back Plate (DG Seal)	P11H-114DGP	P11H-216DGP	P11H-218BDGP	P11H-218BDGP	P11H-441DGP
P17J	Gland Ring (DG Seal)	P17J-114GR	P17J-216GR	P17J-218BGR	P17J-218BGR	P17J-441GR
P17K	Gland Bolt (DG Seal)	P17K-114BG	P217K-216BGB	P217K-216BGB	P217K-216BGB	P17K-441GB
P17M	Washers (DG Seal)	P17M-114GW	P17M-216BGW	P17M-216BGW	P17M-216BGW	P17M-441GW
P24	Impeller Retainer (BC)	P24-114R	P24-216R	P24-218BR	P24-218BR	N/A
P25	Threaded Impeller Nut (BP)	P25-114NUT	P25-216NUT	P25-218BNUT	P25-218BNUT	P25-441NUT
P25A	Buna Impeller O-ring (BP)	N/A	N/A	N/A	N/A	P25A-441NOB
P25A	EPDM Impeller O-ring (BP)	N/A	N/A	N/A	N/A	P25A-441NOE
P25A	FKM Impeller O-ring (BP)	N/A	N/A	N/A	N/A	P25A-441NOV
P25B	Buna Impeller Nut O-ring (BP)	P25B-114NOB	P25B-216NOB	P25B-218BNOB	P25B-218BNOB	P25B-441NOB
P25B	EPDM Impeller Nut O-ring (BP)	P25B-114NOE	P25B-216NOE	P25B-218BNOE	P25B-218BNOE	P25B-441NOE
P25B	FKM Impeller Nut O-ring (BP)	P25B-114NOV	P25B-216NOV	P25B-218BNOV	P25B-218BNOV	P25B-441NOV
P71A	Adapter Pins	P71A-114BAP	P71A-114BAP	P71A-114BAP	P71A-114BAP	N/A
P75	Clamp Assembly	P75-114CA	P75-216CA	P75-218BCA	P75-218BCA	P75-441CA
P80	Carbon Seal	P80-114CS	P80-216CS	P80-218BCS	P80-218BCS	P80-441CS
P80	Silicon Carbon Seal	P80-114SC	P80-216SC	P80-218BSC	P80-218BSC	P80-441SC
P80A	Seal Cup	P80A-114CP	P80A-216CP	P80A-218BCP	P80A-218BCP	P80A-441CP
P80B	Buna Seal O-ring	P80B-114SOB	P80B-216SOB	P80B-218BSOB	P80B-218BSOB	N/A
P80B	EPDM Seal O-ring	P80B-114SOE	P80B-216SOE	P80B-218BSOE	P80B-218BSOE	P80B-441SOE
P80B	Silicone Seal O-ring	P80B-114SOS	P80B-216SOS	P80B-218BSOS	P80B-218BSOS	P80B-441SOS
P80B	FKM Seal O-ring	P80B-114SOV	P80B-216SOV	P80B-218BSOV	P80B-218BSOV	P80B-441SOV
P80C	Spring	P80C-114SG	P80C-216SG	P80C-218BSG	P80C-218BSG	P80C-441SG
P80K	Seat Screw	P80K-114DCS	P80K-216BDCS	P80K-216BDCS	P80K-216BDCS	P80K-441DCS
P80L	Drive Collar	P80L-114DC	P80L-216DC	P80L-218BDC	P80L-218BDC	P80L-441DC
P80N	Silicon Carbide Seat (DG Seal)	P80N-114SC	P80N-216SC	P80N-218BSC	P80N-218BSC	P80N-441SC
P80N	Ceramic Seat (DG Seal)	P80N-114CER	P80N-216CER	P80N-218BCER	P80N-218BCER	N/A
P80N	Tungsten Carbide Seat (DG Seal)	P80N-114TC	P80N-216TC	P80N-218BTC	P80N-218BTC	N/A
P80P	Outboard Gasket (DG Seal)	P80P-114OB	P80P-216OB	P80P-218BOG	P80P-218BOG	P80P-441OG
P80R	Inboard Gasket (DG Seal)	P80R-114IG	P80R-216IG	P80R-218BIG	P80R-218BIG	P80P-441IG
P90	Buna Casing Gaskets	P90-114CGB	P90-216CGB	P90-218BCGB	P90-218BCGB	N/A
P90	EPDM Casing Gasket	P90-114CGE	P90-216CGE	P90-218BCGE	P90-218BCGE	P90-441CGE
P90	Silicone Casing Gasket	P90-114CGS	P90-216CGS	P90-218BCGS	P90-218BCGS	P90-441CGS
P90	FKM Casing Gasket	P90-114CGV	P90-216CGV	P90-218BCGV	P90-218BCGV	P90-441CGV

Model No's & Part No's

Variable Parts

BC114		56C	140TC	180TC
Key No.	Description	Part Number	Part Number	Part Number
P6E	Stub Shaft (BC)	P6E-114-56SH	P6E-114-14SH	P6E-114-18SH
P6P	Stub Shaft (BP)	P6P-114-56SH	P6P-114-14SH	P6P-114-18SH
P40	Deflector	P40-114-56D	P40-114-56D	P40-114-18D
P71	Adapter	P71-114-56A	P71-114-56A	P71-114-18A
P71B	Adapter Bolts	P71B-114B-56AB	P71B-114B-56AB	P71B-114B-18AB
P131	Guard Assembly	P131-114-56GA	P131-114-56GA	P131-114-18GA
P207	Adjustable Leg Kit	P207-56LK	P207-14LK	P207-18LK

BC216		56C	140TC	180TC	210TC	250TC
Key No.	Description	Part Number				
P6E	Stub Shaft (BC)	P6E-216-56SH	P6E-216-14SH	P6E-216-18SH	P6E-216-21SH	P6E-216-25SH
P6P	Stub Shaft (BP)	P6P-216-56SH	P6P-216-14SH	P6P-216-18SH	P6P-216-21SH	P6P-216-25SH
P40	Deflector	P40-216-56D	P40-216-56D	P40-216-56D	P40-216-21D	P40-216B-25D
P71	Adapter	P71-216-56A	P71-216-56A	P71-216-18A	P71-216-21A	P71-216-25A
P71B	Adapter Bolts	P71B-114B-56AB	P71B-114B-56AB	P71B-114B-18AB	P71B-114B-18AB	P71B-114B-18AB
P131	Guard Assembly	P131-216-56A	P131-216-56A	P131-216-18A	P131-216-21A	P131-216-25A
P207	Adjustable Leg Kit	P207-56LK	P207-14LK	P207-18LK	P207-21LK	P207-25LK

BC218/328		140TC	180TC	210TC	250TC	280TSC	320TSC
Key No.	Description	Part Number	Part Number				
P6E	Stub Shaft (BC)	P6E-218-14SH	P6E-218B-18SH	P6E-218B-21SH	P6E-218B-25SH	P6E-218B-28SH	P6E-328-32SH
P6P	Stub Shaft (BP)	P6P-218-14SH	P6P-218B-18SH	P6P-218B-21SH	P6P-218B-25SH	P6P-218B-28SH	P6P-328-32SH
P40	Deflector	P40-218B-14D	P40-218B-14D	P40-218B-14D	P40-218B-14D	P40-218B-28D	P40-328-32D
P71	Adapter	P71-218-14A	P71-218B-18A	P71-218B-21A	P71-218B-25A	P71-218B-28A	P71-328-32A
P71B	Adapter Bolts	P71B-114B-56AB	P71B-114B-18AB	P71B-114B-18AB	P71B-114-18AB	P71B-114B-18AB	P71B-328-32AB
P131	Guard Assembly	P131-218-14GA	P131-218B-18GA	P131-218B-21GA	P131-218B-25GA	P131-218B-28GA	P131-328-32GA
P207	Adjustable Leg Kit	P207-14LK	P207-18LK	P207-21LK	P207-25LK	P207-28LK	P207-32LK

BP441		210TC	250TC	280TSC	320TSC
Key No.	Description	Part Number	Part Number	Part Number	Part Number
P6P	Stub Shaft (BP)	P6P-441-21SH	P6P-441-25SH	P6P-441-28SH	P6P-441-32SH
P40	Deflector	P40-441-14D	P40-441-14D	P40-441-28D	P40-441-32D
P71	Adapter	P71-441-21A	P71-441-25A	P71-441-28A	P71-441-32A
P71B	Adapter Bolts	P71B-114B-18AB	P71B-114-18AB	P71B-114B-18AB	P71B-441-32AB
P131	Guard Assembly	P131-441-21GA	P131-441-25GA	P131-441-28GA	P131-441-32GA
P207	Adjustable Leg Kit	P207-21LK	P207-25LK	P207-28LK	P207-32LK

Repair Kits

BC & BP-Series Repair Kits

Repair Kit # 1

BC	BP*
1 - Casing Gasket (P90)	1 - Casing Gasket (P90)
1 - Carbon Seal (P80)	1 - Carbon Seal (P80)
1 - Seal O-ring (P80B)	1 - Seal O-ring (P80B)
1 - Impeller Retainer (P24)	1 - Impeller Nut O-ring (P25B)
	1 - Impeller O-ring (P25A)*

* For models 114, 216 and 218/328 needing a BP repair kit, please add BP to the end of the kit part number.

Model Number	Buna	EPDM	Silicone	FKM
BC114	PRK1-114B	PRK1-114E	PRK1-114S	PRK1-114V
BC216	PRK1-216B	PRK1-216E	PRK1-216S	PRK1-216V
BC218/BC328	PRK1-218BB	PRK1-218BE	PRK1-218BS	PRK1-218BV
BP441	PRK1-441B	PRK1-441E	N/A	PRK1-441V

*BP441 only

Repair Kit # 2

3 - Casing Gasket (P90)	3 - Seal O-Ring (P80B)	3 - Carbon Seal (P80)
-------------------------	------------------------	-----------------------

Model Number	Buna	EPDM	Silicone	FKM
BC114	PRK2-114B	PRK2-114E	PRK2-114S	PRK2-114V
BC216	PRK2-216B	PRK2-216E	PRK2-216S	PRK2-216V
BC218/BC328	PRK2-218BB	PRK2-218BE	PRK2-218BS	PRK2-218BV
BP441	PRK2-441B	PRK2-441E	N/A	PRK2-441V

Repair Kit # 3

1 - Carbon Seal (P80)	1 - Seal O-Ring (P80B)
1 - Spring (P80C)	1 - Cup (P80A)

Model Number	Buna	EPDM	Silicone	FKM
BC114	PRK3-114B	PRK3-114E	PRK3-114S	PRK3-114V
BC216	PRK3-216B	PRK3-216E	PRK3-216S	PRK3-216V
BC218/BC328	PRK3-218BB	PRK3-218BE	PRK3-218BS	PRK3-218BV
BP441	PRK3-114B	PRK3-441E	N/A	PRK3-441V

Repair Kit # 4

BC	BP
1 - Casing Gasket (P90)	1 - Casing Gasket (P90)
1 - Carbon Seal (P80)	1 - Carbon Seal (P80)
1 - Seal O-ring (P80B)	1 - Seal O-ring (P80B)
1 - Impeller Retainer (P24)	1 - Impeller Nut O-ring (P25B)
1 - Seal Cup (P80A)	1 - Seal Cup (P80A)
1 - Spring (P80C)	1 - Spring (P80C)
	1 - Impeller O-ring (P25A)*

* For models 114, 216 and 218/328 needing a BP repair kit, please add BP to the end of the kit part number.

Model Number	Buna	EPDM	Silicone	FKM
BC114	PRK4-114B	PRK4-114E	PRK4-114S	PRK4-114V
BC216	PRK4-216B	PRK4-216E	PRK4-216S	PRK4-216V
BC218/BC328	PRK4-218BB	PRK4-218BE	PRK4-218BS	PRK4-218BV
BP441	PRK4-441B	PRK4-441E	N/A	PRK4-441V

*BP441 only

Repair Kits

BC & BP-Series DG Repair Kits

DG Repair Kit

BC	BP
1 - Seal Seat (P80N)	1 - Seal Seat (P80N)
1 - Seal O-ring (P80B)	1 - Seal O-ring (P80B)
1 - Impeller Pin (P24)	1 - Impeller Nut O-ring (P25B)
1 - Carbon Seal (P80)	1 - Carbon Seal (P80)
1 - Spring (P80C)	1 - Spring (P80C)
1 - Inboard Gasket (P80R)	1 - Inboard Gasket (P80R)
1 - Seal Cup (P80A)	1 - Seal Cup (P80A)
1 - Casing Gasket (P90)	1 - Casing Gasket (P90)
1 - Outboard Gasket (P80P)	1 - Outboard Gasket (P80P)
	1 - Impeller O-ring (P25A)*

* For models 114, 216 and 218/328 needing a BP repair kit, please add BP to the end of the kit part number.

Model Number	Elastomer	Ceramic	SC	TC
BC114	Buna	PRKDG-114BCER	PRKDG-114BSC	PRKDG-114BTC
	EPDM	PRKDG-114ECER	PRKDG-114ESC	PRKDG-114ETC
	SILICONE	PRKDG-114SCER	PRKDG-114SSC	PRKDG-114STC
	FKM	PRKDG-114VCER	PRKDG-114VSC	PRKDG-114VTC
BC216	Buna	PRKDG-216BCER	PRKDG-216BSC	PRKDG-216BTC
	EPDM	PRKDG-216ECER	PRKDG-216ESC	PRKDG-216ETC
	SILICONE	PRKDG-216SCER	PRKDG-216SSC	PRKDG-216STC
	FKM	PRKDG-216VCER	PRKDG-216VSC	PRKDG-216VTC
BC218/BC328	Buna	PRKDG-218BBCER	PRKDG-218BBSC	PRKDG-218BBTC
	EPDM	PRKDG-218BECER	PRKDG-218BESC	PRKDG-218BETC
	SILICONE	PRKDG-218BSCER	PRKDG-218BSSC	PRKDG-218BSTC
	FKM	PRKDG-218BVCER	PRKDG-218BVSC	PRKDG-218BVTC
BP441	Buna	PRKDG-441BCER	PRKDG-441BSC	PRKDG-441BTC
	EPDM	PRKDG-441ECER	PRKDG-441ESC	PRKDG-441ETC
	FKM	PRKDG-441VCER	PRKDG-441VSC	PRKDG-441VTC

*BP441 only

DG Conversion Kit

1 - DG Backplate (P11H)
 4 - Lock Washers (P17M)
 1 - Inboard Gasket (P80R)

1 - Gland Ring (P17J)
 1 - Seal Seat (P80N)

4 - Gland Bolts (P17K)
 1 - Outboard Gasket (P80P)

Model Number	Ceramic	SC	TC
BC114	PCK-114DGCER	PCK-114DGSC	PCK-114DGTC
BC216	PCK-216DGCER	PCK-216DGSC	PCK-216DGTC
BC218/BC328	PCK-218BDGCER	PCK-218BDGSC	PCK-218BDGTC

Limited Warranty

Dixon Sanitary, a division of Dixon Valve and Coupling Company, (herein called Dixon Sanitary) warrants the products described herein, and manufactured by Dixon Sanitary to be free from defects in material and workmanship for a period of one (1) year from date of shipment by Dixon Sanitary under normal use and service. Its sole obligation under this warranty being limited to repairing or replacing, as hereinafter provided, at its option any product found to Dixon Sanitary's satisfaction to be defective upon examination by it, provided that such product shall be returned for inspection to Dixon Sanitary within three (3) months after discovery of the defect. The repair or replacement of defective products will be made without charge for parts or labor. This warranty shall not apply to: (a) parts or products not manufactured exclusively for Dixon Sanitary, the warranty of such items being limited to the actual warranty extended to Dixon Sanitary by its supplier; (b) any product that has been subject to abuse, negligence, accident, or misapplication; (c) any product altered or repaired by others than Dixon Sanitary; and (d) to normal maintenance services and the replacement of service items (such as gaskets and seats) made in connection with such services. To the extent permitted by State law, this limited warranty shall extend only to the buyer and any other person reasonably expected to use or consume the goods who is injured in person by any breach of the warranty. No action may be brought against Dixon Sanitary for an alleged breach of warranty unless such action is instituted within one (1) year from the date the cause of action accrues. This limited warranty shall be construed and enforced to the fullest extent allowable by applicable State law.

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Some products and sizes may be discontinued when stock is depleted, or may require a minimum quantity for ordering.

NOTE: Reasonable care has been taken in preparing this catalog. Dixon Sanitary, a division of Dixon Valve & Coupling Company, reserves the right to make corrections and any dimensional changes.

Dixon, founded in 1916, is a premier manufacturer and supplier of hose couplings, valves, dry-disconnects, swivels, and other fluid transfer and control products. The company's global reach includes a wide range of products for numerous industries including petroleum exploration, refining, transportation, chemical processing, food & beverage, steel, fire protection, construction, mining and manufacturing. Dixon's strategic objective is to create solutions that make products safer, leak-free, longer lasting, and always available.



The Right Connection®

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