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# Safety

The following signs may be used in this manual. To avoid serious injury and/or possible damage to equipment, pay attention to these messages. Hazards or unsafe practices could result in severe personal injury or death.



Indicates a hazardous situation that, if not avoided, will result in death or serious injury.



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



Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. May also be used to alert against an unsafe operating or maintenance practice.

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 series, model, serial number, and revision level of the equipment.

Safety labels are placed on equipment where appropriate. Do not remove any labeling from any piece of equipment. Replace any label that is missing.

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

## General Guidelines

- The owner must comply with these operating instructions and the authorized use of this piece of equipment. Should problems arise that cannot be solved using these operating instructions, please contact Dixon Sanitary. We will be happy to provide further assistance.
- If any modification work is performed on the product by the owner, Dixon shall no longer be considered the manufacturer of the device. In such cases, all components must be subjected to a new certification process for any applicable certifications that the equipment holds. Unless agreed to in writing by Dixon, liability, warranties, and guarantees shall immediately be deemed null and void as soon as you:
  - Perform modifications/conversion work on the product.
  - Use the product for unauthorized purposes.
  - Remove or disable safety elements.
  - Process products whose material, form, and size do not correspond exactly to the description provided.
  - Make alterations to the original state of the device.
- The operating instructions are regarded as part of the valve.
- The operating instructions shall be valid for the entirety of the device's lifespan.
- The operating and maintenance personnel must always be able to access the operating instructions.
- The safety instructions provided in the operating instructions must be observed.
- The operating instructions must be maintained and updated as necessary.
- The operating instructions must be passed on to any subsequent owners or operators of the device.

# Safety

## Owner Must Ensure...

- The product is used only as authorized.
- The product is used only when it is in fault-free, fully functional condition and the safety equipment is regularly checked to ensure that it is fully functional.
- The product is operated, maintained, and repaired only by personnel with the appropriate qualifications and authorization.
- Checks are made before the product is put into operation to ensure that only the authorized person is in the work area and no one is in danger of being injured if the product is in operation.
- The product is checked for visual damage prior to commissioning to ensure that it is operated only when free of faults.
- Any defects are reported immediately to the appropriate supervisor.
- All safety and warning notices attached to the equipment are legible, and none are removed.
- The operating instructions are always kept close to the product operation site, in a legible and complete state.
- Personnel are regularly instructed on all occupational safety and environmental protection issues and are familiar with and observe the operating instructions, especially the safety instructions contained herein.
- Personnel are trained and supervised to ensure that they follow safety measures, including the obligatory use of personal protective equipment.
- The product is only connected to pipelines that are depressurized at the time of connection.
- There is no tensile or compressive stress acting on the product connections.
- There is no residual risk at any point where pressure could occur. Pressure can cause sudden failure in or damage to the lines and connections.
- Warning notices in the documentation for supplier modules are observed and integrated into the risk assessments in the workplace.

## 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. Examples of corrosion that can result from improper care are included below.

- 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 encounter moist stainless steel.
- Never leave rubber mats, fittings, wrenches, or other tools 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.
- Immediately rinse equipment after use with warm water until the rinse water is clear. Clean the equipment (COP or CIP) as soon as possible after rinsing. Corrosion: discoloration, deposits, and pitting. Product deposits often cause pitting beneath the particles.
- Use only recommended cleaning compounds. Purchase chemicals from reputable and responsible chemical manufacturers familiar with stainless steel processing equipment. Ensure they continuously check the effects of their products on stainless steel.
- Use cleaning chemicals exactly as specified by the manufacturer. Do not use excessive concentrations, temperatures, or exposure times. Corrosion: pitting, discoloration, or stress cracks. Permanent damage often occurs from excessive chemical concentrations, temperatures, or exposure times.
- For manual cleaning, use only soft non-metallic brushes, sponges, or pads. Brush with the grain on polished surfaces to 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.
- Use chemical bactericides exactly as prescribed by the chemical manufacturer in concurrence with the 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 for 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.
- 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.
- 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, and a parts list for the Dixon® ExD-series centrifugal pump.

The Dixon ExD-series centrifugal pump is made up of two sections: the pump components (wet end) and the motor. The pump is mounted to the motor with a stainless steel adapter and is coupled to the motor shaft with a stainless steel shaft sleeve and stub shaft. The pump impeller on the ExD-series centrifugal pump is threaded directly on to the pump stub shaft.

The casing of the ExD pump is a non-volute style casing that connects directly to the adapter. The design of the casing and adapter features unique characteristics that allow the pump casing discharge outlet to be rotated to various positions without disassembling the pump.

The motors used on this pump are standard NEMA C-face motors available as a total enclosed fan cooled (TEFC) or totally enclosed not ventilated (TENV) depending on the motor size. Other special motor options are available upon request.

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

## Technical Specifications

### Materials of Construction

- Pump casing: 316L stainless steel
- Impeller: CF3M (316L) stainless steel
- Pump cover: 316L stainless steel
- Stub shaft: 316L stainless steel
- Rotary seal: silicon carbide, tungsten carbide, or carbon
- Stationary seal: silicon carbide, ceramic, or tungsten carbide
- Elastomers: FKM (standard), nitrile rubber, EPDM (other options available, contact Dixon Sanitary)
- Non-product contact components: 304 stainless steel
- Surface finish: 32 Ra (other finishes available, contact Dixon Sanitary)
- Connections: clamp (other connections available, contact Dixon Sanitary)

### Performance Characteristics

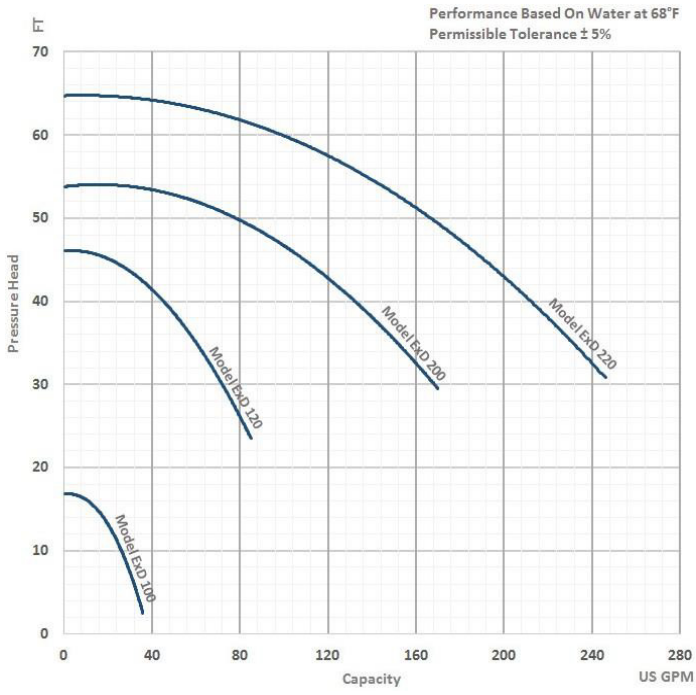
- Nominal capacity: **500 GPM**
- Maximum head: 225 feet
- Temperature range: **32°F to 212°F (0°C to 100°C)**
- Viscosity range: 0-500cP (contact Dixon Sanitary for higher viscosities)
- Nominal speed: up to 3500 RPM - 60 Hz

### Motor Information

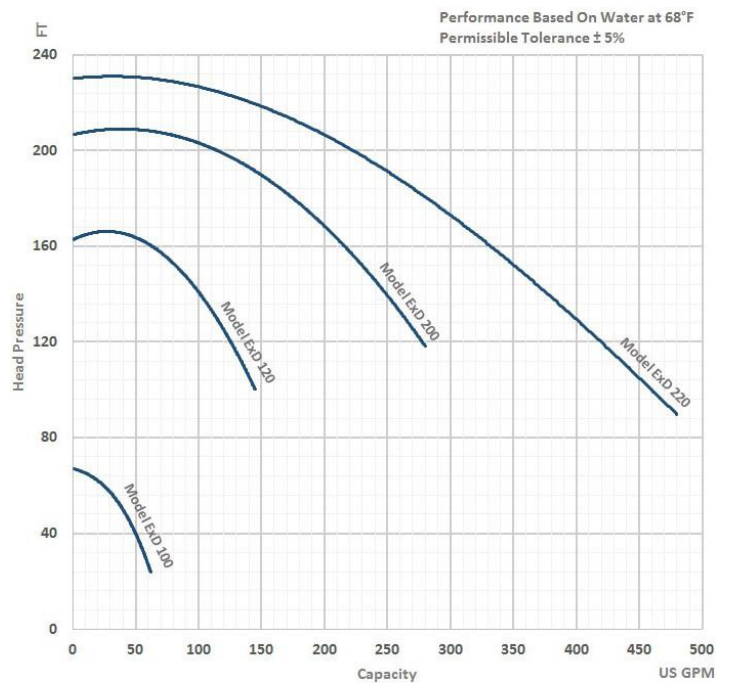
- Dixon ExD-series centrifugal pumps use standard NEMA TENV/TEFC C-face electric motors
- Motors are available in a variety of different options including washdown, explosion proof, premium efficiency, general purpose, and severe duty
- Voltage and frequency options:
  - 1 Ph, 60Hz, 115/230 VAC (1750 RPM and 3500 RPM)
  - 3 Ph, 60Hz, 208-220/460 VAC (1750 RPM and 3500 RPM)
  - 3 Ph, 60Hz, 575 VAC (1750 RPM and 3500 RPM)
  - 3 Ph, 50Hz, 208-220/380 VAC (1450 RPM and 2900 RPM)
- Motor performance curves available upon request

# Pump Curves

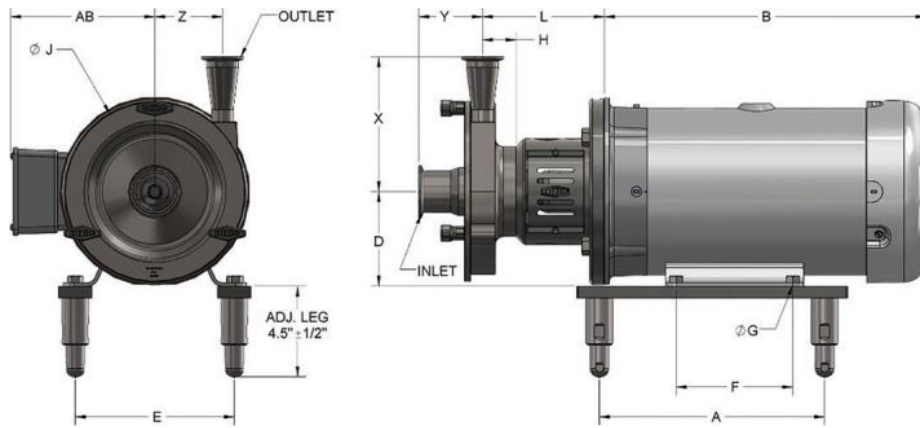
## 1750 RPM



## 3500 RPM



## Dimensions



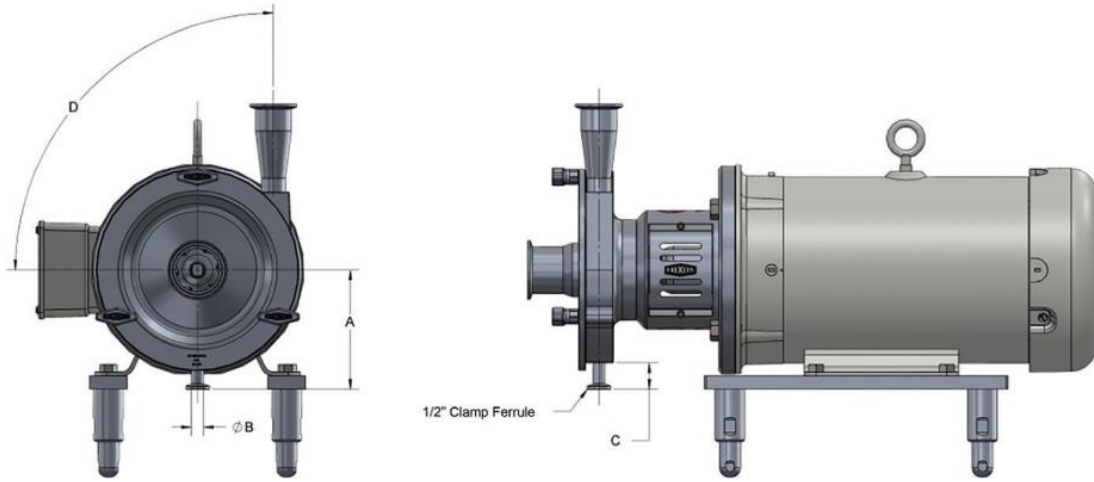
Pump Model	Connection Size	
	Inlet	Outlet
ExD 100	1.00"	1.00"
ExD 110	1.50"	1.00"
ExD 120	2.00"	1.50"
ExD 130	2.50"	1.50"
ExD 200	2.50"	2.00"
ExD 210	3.00"	2.00"
ExD 220	3.00"	2.50"
ExD 230	4.00"	2.50"

Pump Model	Frame Size	A (in)	AA (conduit size)	AB (in)	B (in)	D (in)	E (in)	F (in)	OG (in)	H (in)	OJ (in)	L (in)	X (in)	Y (in)	Z (in)
ExD 100 ExD 110	56C	8.50"	0.50"	5.00"	**	3.50"	4.88"	3.00"	0.34"	1.51"	5.95"	5.44"	4.20"	2.16"	2.00"
	143/145TC	9.50"	0.75"	5.25"											
	182/184TC	10.63"	0.75"	5.88"											
ExD 120 ExD 130	56C	8.50"	0.50"	5.00"	**	3.50"	4.88"	3.00"	0.34"	1.60"	8.50"	5.75"	6.38"	3.00"	3.20"
	143/145TC	9.50"	0.75"	5.25"											
	182/184TC	10.63"	0.75"	5.88"											
ExD 200 ExD 210	182/184TC	10.63"	0.75"	5.88"	**	4.50"	7.50"	4.50"	0.41"	1.84"	9.94"	7.63"	7.62"	3.34"	3.50"
	213/215TC	13.88"	1.00"	7.38"											
	254/256TC	18.00"	1.00"	9.63"											
ExD 220 ExD 230	182/184TC	10.63"	0.75"	5.88"	**	4.50"	7.50"	4.50"	0.41"	1.96"	10.51"	7.75"	8.25"	3.13"	3.63"
	213/215TC	13.88"	1.00"	7.38"											
	254/256TC	18.00"	1.00"	9.63"											

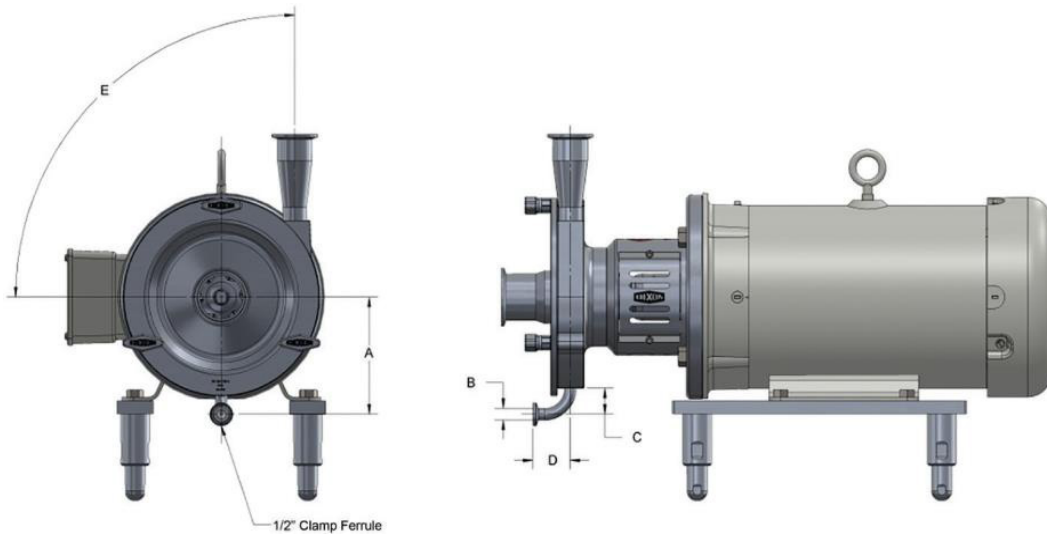
\*\* Contact Dixon Sanitary for detailed drawing.



## Dimensions

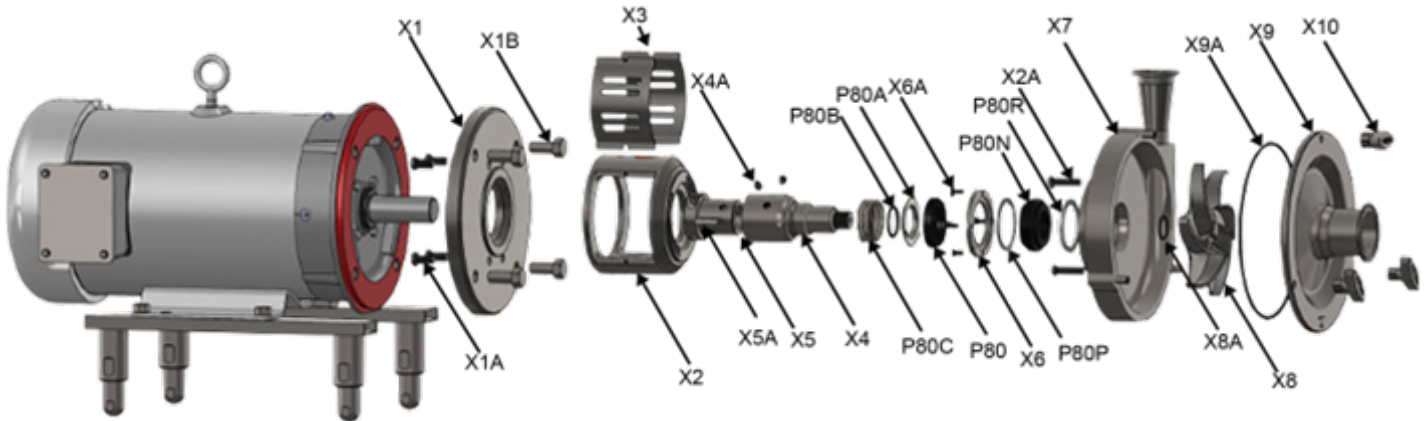


Pump Model	Casing Drain Option	A (in)	ØB (in)	C (in)	D
ExD 100/110	Option A	3.71"	0.50"	1.13"	45°
	Option J				90°
ExD 120/130	Option A	5.06"	0.50"	1.13"	45°
	Option J				90°
ExD 200/210	Option A	5.70"	0.50"	1.13"	45°
	Option J				90°
ExD 220/230	Option A	5.98"	0.50"	1.13"	45°
	Option J				90°



Pump Model	Casing Drain Option	A (in)	ØB (in)	C (in)	D (in)	E
ExD 100/110	Option D	3.71"	0.50"	1.13"	1.63"	90°
	Option K					45°
ExD 120/130	Option D	5.06"	0.50"	1.13"	1.63"	90°
	Option K					45°
ExD 200/210	Option D	5.70"	0.50"	1.13"	1.63"	90°
	Option K					45°
ExD 220/230	Option D	5.98"	0.50"	1.13"	1.63"	90°
	Option K					45°

## Bill of Materials



Item #	Description
X1	adapter to motor flange
X1A	adapter bolts
X1B	motor bolts and lock washers
X2	adapter
X2A	adapter casing and sleeve bolts
X3	guard with bolts
X4	stub shaft with set screws
X5	shaft sleeve
X5A	shaft sleeve key
X6	seal gland
X6A	seal gland bolts
X7	pump casing
X8	impeller
X8A	impeller O-ring
X9	pump cover
X9A	cover/casing O-ring
X10	cover wing nuts

### DG Seal

Item #	Description
P80	rotary seal
P80A	seal cup
P80B	seal O-ring
P80C	seal spring
P80P	outboard gasket
P80N	seal seat
P80R	inboard gasket

# 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

Item #	Part Number	Description	Pump Models	Tools
X1A	X1A-100-FAB	100-series flange to adapter bolts	ExD 100-110	3/16" Allen or hex key
			ExD 120-130	
			ExD 200-210	
			ExD 220-230	
X1B	X1B-100-FMB56	100-series flange to motor bolts and lock washers, 56C to 140TC frame	ExD 100-110	9/16" wrench
	X1B-100-FMB18	100-series flange to motor bolts and lock washers, 180TC to 250TC frame	ExD 120-130	
			ExD 200-210	3/4" wrench
			ExD 220-230	
X2A	X2A-100-ACB	100-series adapter to casing bolts	ExD 100-110	5/32" Allen or hex key
	X2A-200-ACB	200-series adapter to casing bolts	ExD 120-130	
			ExD 200-210	3/16" Allen or hex key
			ExD 220-230	
X4A	X4A-100-DPSS	100-series shaft dog point set screw	ExD 100-110	5/32" Allen or hex key
	X4-200-DPSS	200-series shaft dog point set screw	ExD 120-130	
			ExD 200-210	3/16" Allen or hex key
			ExD 220-230	
X5	X5-100SL56 to X5-100-SL18	100-series shaft sleeve and bolts (X2A) for 56C to 180TC frame	ExD 100-110	5/32" Allen or hex key
	X5-200-SL18 to X5-200-SL25	200-series shaft sleeve and bolts (X2A) for 180TC to 250TC frame	ExD 120-130	
			ExD 200-210	3/16" Allen or hex key
			ExD 220-230	
X6A	X6A-100-SGB	100-series seal gland bolt	ExD 100-110	3/32" Allen or hex key
	X6A-200-SGB	200-series seal gland bolt	ExD 120-130	
			ExD 200-210	1/8" Allen or hex key
			ExD 220-230	
X7	X7-100-CASE-C to X7-120-CASE-C	100-120-series pump casing with clamp outlet (cover studs)	ExD 100-110	5/32" Allen or hex key
	X7-200-CASE-C to X7-200-CASE-C	200-220-series pump casing with clamp outlet (cover studs)	ExD 120-130	
			ExD 200-210	3/16" Allen or hex key
			ExD 220-230	
X10	X10-100-WN	100-series cover wing nuts	ExD 100-110	adjustable wrench
	X10-200-WN	200-series cover wing nuts	ExD 120-130	
			ExD 200-210	
			ExD 220-230	

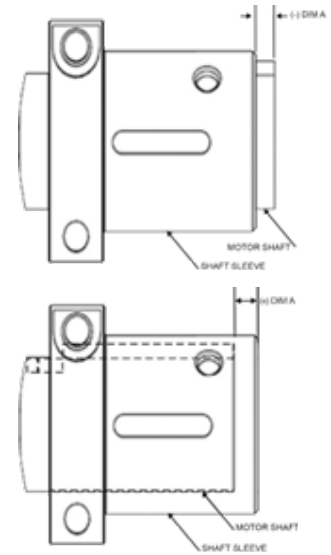
Other general handtools for ExD models 100-230:

- Soft mallet
- Phillips screw driver
- O-ring pick
- Liquid thread locker
- Vernier caliper

## Assembly

1. Attach motor flange (**item X1**) to adapter (**item X2**) using the four socket head cap screws (**item X1A**). Ensure that the drain hole in the bottom of the adapter (**item X2**) and the drain slot in the back of the motor flange (**item X1**) are facing the same direction.
2. Setting the shaft sleeve:
  - a. Make sure that the motor shaft key is removed from the motor prior to installing the shaft sleeve (**item X5**).
  - b. Slide the shaft sleeve (**item X5**) on to the motor shaft with the shaft sleeve oriented so that the shaft sleeve bolts are closest to the motor.
  - c. Tighten shaft sleeve bolts until there is a slight resistance to movement between the shaft sleeve (**item X5**) and the motor shaft. The shaft sleeve (**item X5**) should be able to be moved by hand, but still holds position if your hand is removed.
  - d. Using a vernier caliper, set the shaft sleeve (**item X5**) in place on the motor shaft using the table below.

Pump Model	Motor Frame Size	DIM A (in)	(+/-)
ExD 100 ExD 110	56C	0.385"	+
	143TC to 145TC	0.243"	+
ExD 120 ExD 130	56C	0.355"	+
	143TC to 145TC	0.209"	+
	182TC to 184TC	0.264"	-
ExD 200 ExD 210	182TC to 184TC	0.506"	+
	213TC to 215TC	0.000"	n/a
	254TC to 256TC	0.627"	-
ExD 220 ExD 230	182TC to 184TC	0.479"	+
	213TC to 215TC	0.024"	-
	254TC to 256TC	0.654"	-



- e. Once the shaft sleeve (**item X5**) is set at the proper dimension, tighten the shaft sleeve bolts according to the torque value listed in the recommended torque valve chart on page 14. Recheck the position of the shaft sleeve to ensure that it did not move while tightening the shaft sleeve bolts (**item X2A**).
3. Install the stub shaft:
  - a. Install the stub shaft (**item X4**) on the shaft sleeve (**item X5**) making sure the keyways of the stub shaft engage properly with the keys on the shaft sleeve.
  - b. Ensure that the set screws on the stub shaft are properly aligned with the two counter bores on the stub shaft sleeve.
  - c. Tighten stub shaft socket head set screws.
4. Install the adapter assembly (**items X1 and X2**) from step 1 to the motor using the four adapter bolts. Apply liquid thread locker to the four adapter bolts. Ensure that the adapter drain hole is facing down towards the ground.
5. Install the rotating seal/spring/cup assembly:
  - a. Place the seal spring (**item P80C**) over the stub shaft (**item X4**) and ensure that the seal spring is sitting completely flat on the bottom face of the stub shaft.
  - b. Place the seal O-ring (**item P80B**) into the back of the rotating seal (**item P80**).
  - c. Place the rotating seal (**item P80**) and seal O-ring (**item P80B**) assembly securely onto the seal cup (**item P80A**) making sure to line up the notches in the rotating seal with protruding tabs of the seal cup.
  - d. Slide the rotating seal (**item P80**)/seal O-ring (**item P80B**)/seal cup (**item P80A**) onto the stub shaft (**item X4**) just until the bottom face of the seal cup touches the seal spring (**item P80C**).
  - e. Rotate the seal assembly while keeping the stub shaft (**item X4**) stationary until the slot in the bottom of the seal cup (**item P80A**) is aligned with the stub shaft seal pin that extrudes from the stub shaft

## Assembly

6. Install the stationary seal assembly:
  - a. Install the stationary inboard gasket (**item P80R**) into the bottom of the pump casing (**item X7**) stationary seal cavity. Ensure that the gasket is sitting flat and is centered properly by the slight counter bore in the bottom of the seal cavity.
  - b. Place the stationary seal (**item P80N**) on top of the inboard stationary gasket (**item P80R**).
  - c. Place the stationary outboard gasket (**item P80P**) on top of the stationary seal.
  - d. Place the seal ring gland (**item X6**) on top of the stationary outboard gasket (**item P80P**) so that the part number on the seal ring gland is facing up.
  - e. Apply liquid thread locker to the seal ring gland bolts (**item X6A**) and thread the bolts through the seal ring gland and into the pump casing (**item X7**).
  - f. Tighten the seal ring gland bolts (**item X6A**) in a star pattern according to the recommended torque chart in this manual.
7. Attach the pump casing to the adapter:
  - a. Lower the pump casing (**item X7**) onto the pump adapter (**item X2**) compressing the rotating seal assembly as you lower the casing.
  - b. Press down on the casing (**item X7**) making sure that casing is sitting firmly against the adapter (**item X2**).
  - c. Thread the adapter casing bolts (**item X2A**) through the adapter slots and into the threaded holes on the back of the pump casing (**item X7**). NOTE: Apply liquid thread locker to the bolts.
  - d. Thread the adapter casing bolts (**item X2A**) in until finger tight. Adjust the position of the casing by rotating until the desired position is reached.
  - e. Tighten the adapter casing bolts (**item X2A**) evenly and torque to the value given in the recommended torque value chart given in this manual.
8. Attach the impeller to the stub shaft:
  - a. Apply food grade lubricant to impeller O-ring (**item X8A**) and place the O-ring in the O-ring groove of the stub shaft (**item X4**).
  - b. Thread the impeller (**item X8**) onto the pump stub shaft (**item X4**). Tighten the impeller until you feel it bottom out against the stub shaft (**item X4**). NOTE: Place an Allen wrench in the leak detection hole on the base of the stub shaft (**item X4**) to lock against the adapter (**item X2**) while tightening the impeller.
9. Install the front cover onto the casing:
  - a. Apply food grade lubricant to the front cover O-ring (**item X9A**) and place the O-ring into the O-ring groove of the front cover (**item X9**).
  - b. Place the front cover (**item X9**) onto the pump casing (**item X7**).
  - c. Install the front cover wing nuts (**item X10**) onto the threaded casing studs. If the stud is damaged in any way, it can be replaced with a standard cup point set screw (5/16-18 x 1-1/4 for all 200 series models).
  - d. Tighten the front cover wing nuts (**item X10**) evenly using a wrench on the slots of the wing nuts.
  - e. Rotate the pump stub shaft (**item X4**) to ensure that you do not hear any metal to metal contact of the impeller with the front cover. If there is contact, disassemble and recheck the setting of the stub shaft sleeve (**item X5**).
10. Install the adapter guards:
  - a. Using the provided guard bolts, attach the two safety guards (**item X3**) to the adapter (**item X2**) and tighten securely.

# Assembly

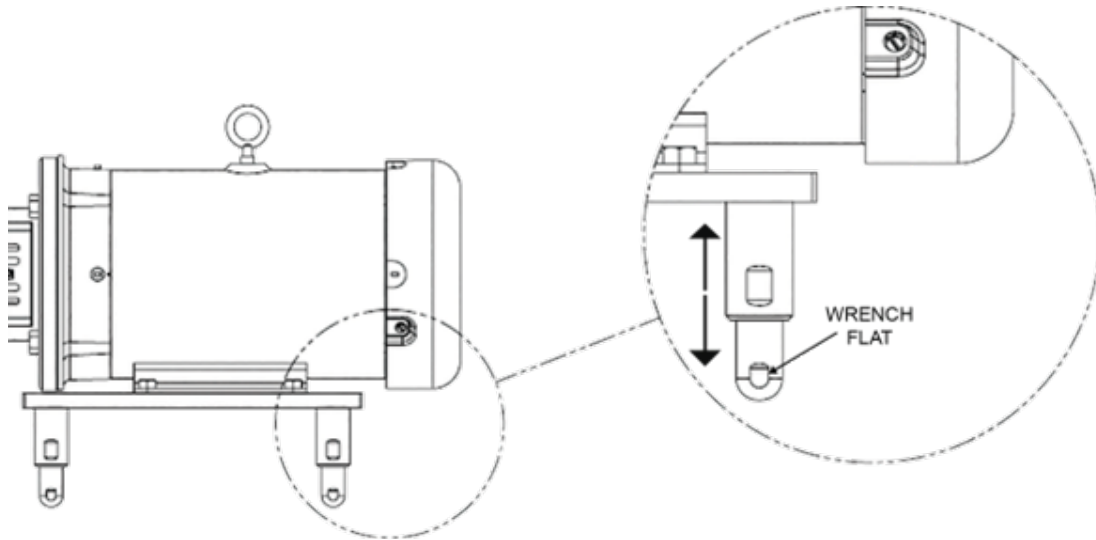
## Recommended Torque Values

Item #	Part #	Description	Pump Models	Torque Value	
X1A	X1A-100-FAB	100-series flange to adapter bolts	ExD 100-110	20 ft-lbs	28 N-m
			ExD 120-130		
			ExD 200-210		
			ExD 220-230		
X1B	X1B-100-FMB56	100-series flange to motor bolts and lock washers 56C to 140TC frame	ExD 100-110	20 ft-lbs	28 N-m
			ExD 120-130		
	X1B-100-FMB18	100-series flange to motor bolts and lock washers 180TC to 250TC frame	ExD 200-210	50 ft-lbs	68 N-m
			ExD 220-230		
X2A	X2A-100-ACB	100-series adapter to casing bolts	ExD 100-110	12 ft-lbs	17 N-m
			ExD 120-130		
	X2A-200-ACB	200-series adapter to casing bolts	ExD 200-210	20 ft-lbs	28 N-m
			ExD 220-230		
X4A	X4A-100-DPSS	100-series shaft dog point set screw	ExD 100-110	11 ft-lbs	15 N-m
			ExD 120-130		
	X4-200-DPSS	200-series shaft dog point set screw	ExD 200-210	20 ft-lbs	28 N-m
			ExD 220-230		
X5	X5-100-SL56 to X5-100-SL18	100-series shaft sleeve with bolts (item X2A) for 56C to 180TC	ExD 100-110	24 ft-lbs	33 N-m
			ExD 120-130		
	X5-200-SL18 to X5-200-SL25	200-series shaft sleeve with bolts (item X2A) for 180TC to 250TC	ExD 200-210	45 ft-lbs	61 N-m
			ExD 220-230		
X6A	X6A-100-SGB	100-series seal gland bolt	ExD 100-110	3 ft-lbs	4 N-m
			ExD 120-130		
	X6A-200-SGB	200-series seal gland bolt	ExD 200-210	6 ft-lbs	8 N-m
			ExD 220-230		

## Installation

### Optional Leg Kit Installation and Leveling

The pump can be easily leveled by installing the optional leg kit. Using an adjustable wrench, fit the wrench to the wrench flat shown in the diagram below. When viewed from the top, turn the wrench in a counterclockwise direction to lower the leg, or turn in a clockwise direction to raise leg.



### 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 ensure 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 and do preventative maintenance or repair.

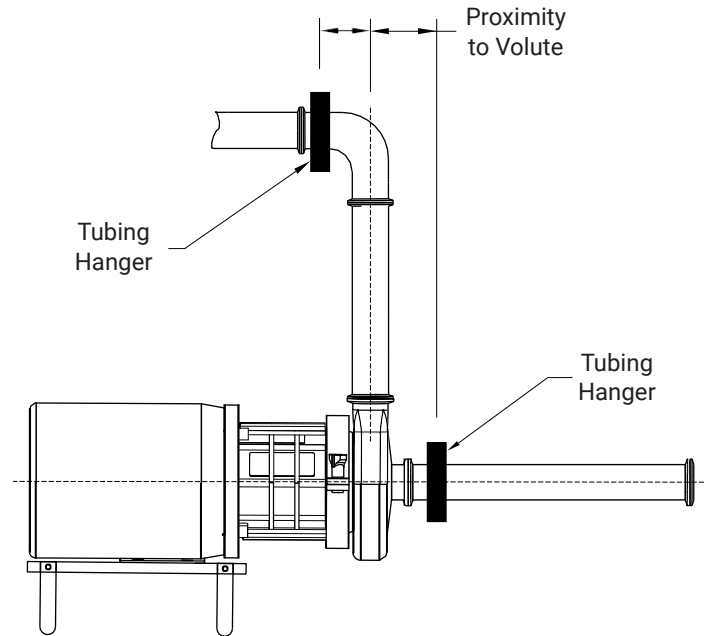
# Installation

## Piping: General Guidelines



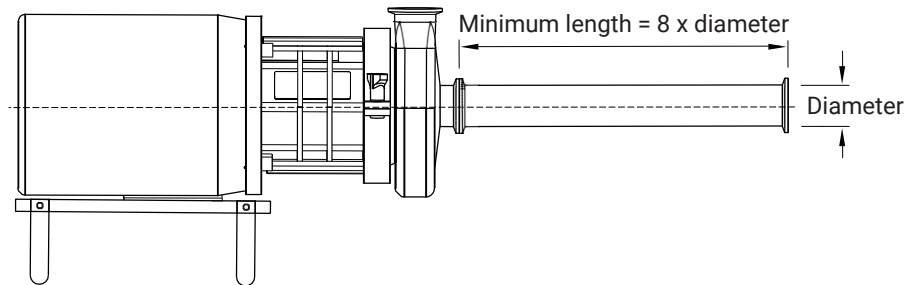
Improper piping can lead to a number of problems with pump performance which could lead to increased maintenance costs.

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



## Piping: Suction Guidelines

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

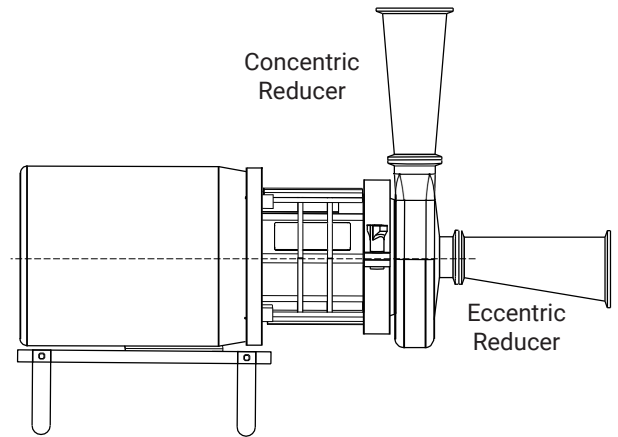




# Installation

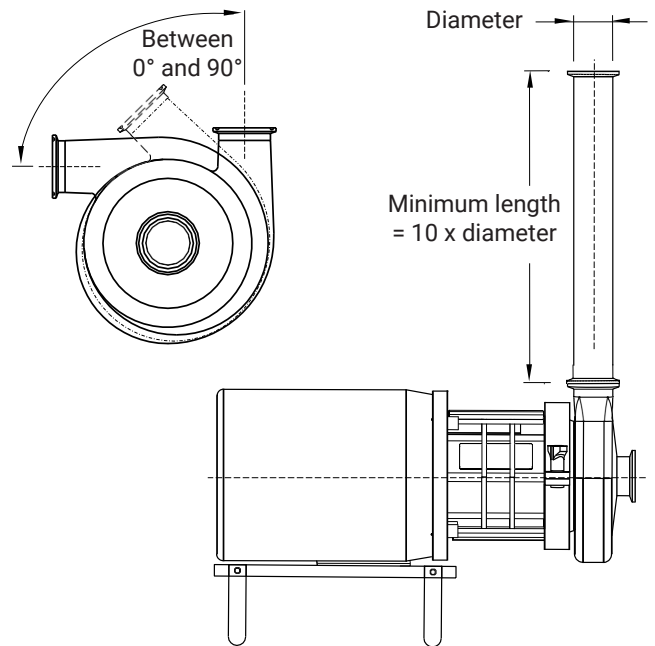
## Piping: Suction Guidelines (cont.)

- To prevent air leaks, ensure all joints in suction line are well sealed.
- Use an eccentric reducer with straight side up to prevent air pockets from forming which will result in a decrease in pump efficiency (see diagram to 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

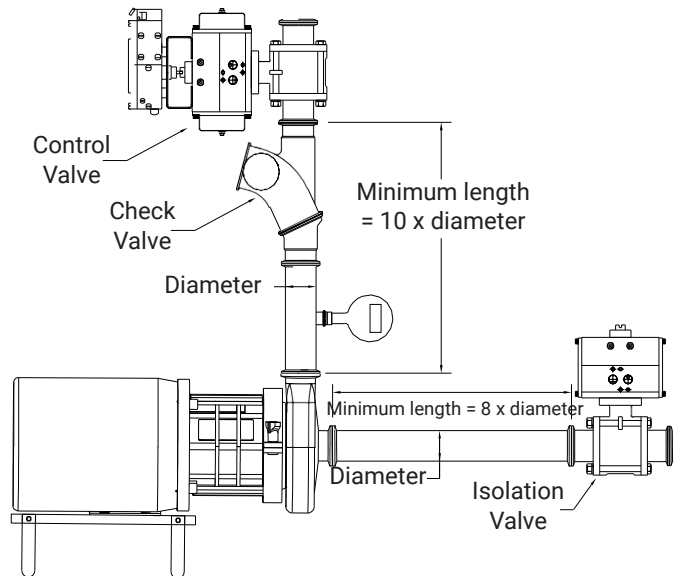
- Discharge side should be short and direct. Use a minimal number of restrictions (see diagram to right).
- Vertical or top horizontal pump discharge position is preferred (see diagram to right).
- While increasing the discharge side line size is recommended, please note:
  - Using too large of a line size may lead to motor overload and cavitation.
  - Using a smaller than recommended 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 diagram to right).
- If pump is not in a flooded suction condition, install either a foot valve or check valve to ensure pump casing 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.

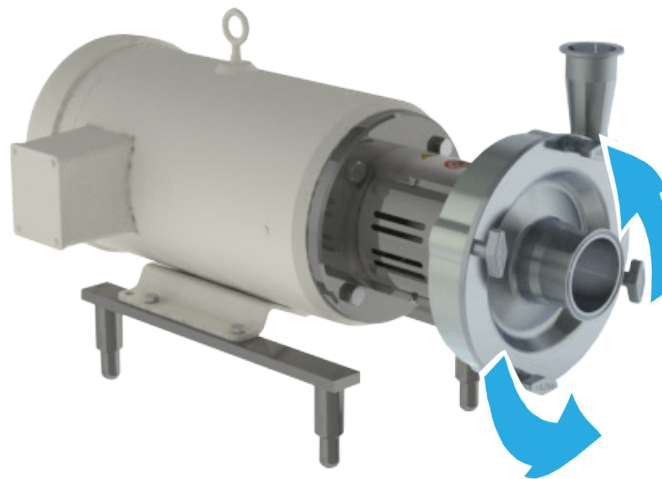


## Electrical



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 at 800.789.1718 for a replacement.
- Correct rotation is counterclockwise when facing pump inlet connection.



## Operation

### Priming the Pump



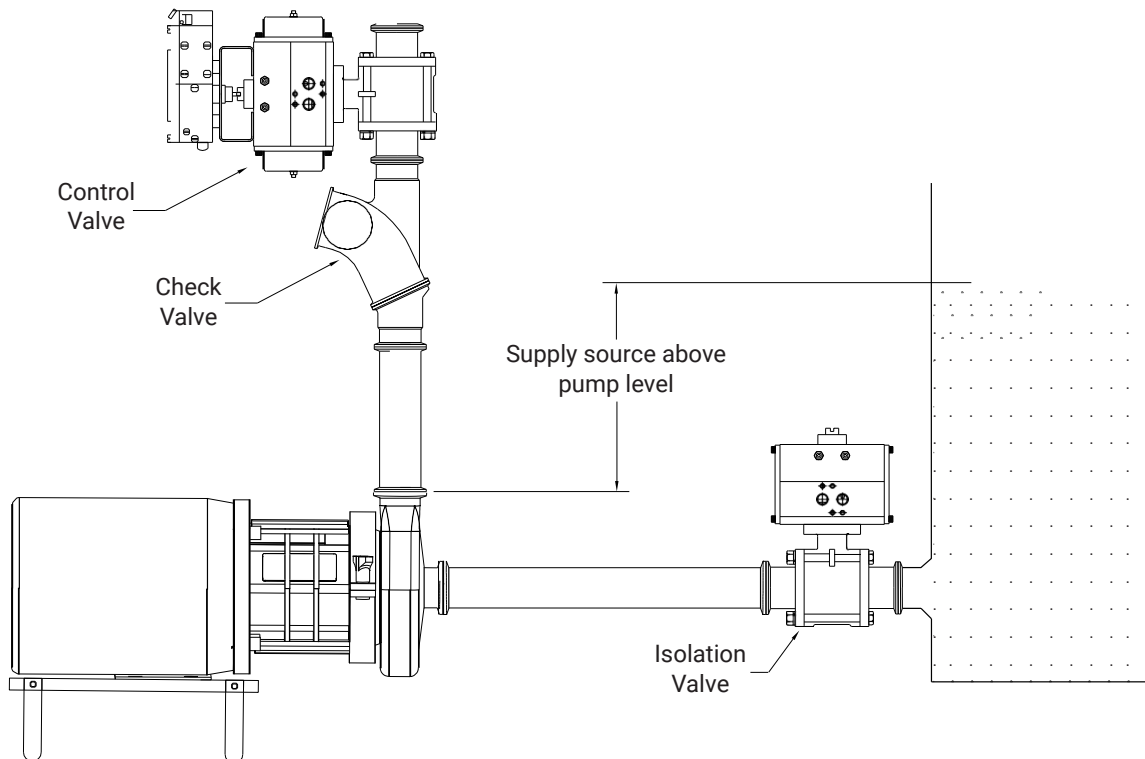
To avoid damage to the pump, the pump casing must be flooded with liquid BEFORE starting the pump.

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 casing is flooded, start pump.

If the fluid supply is below the pump, see page 20.



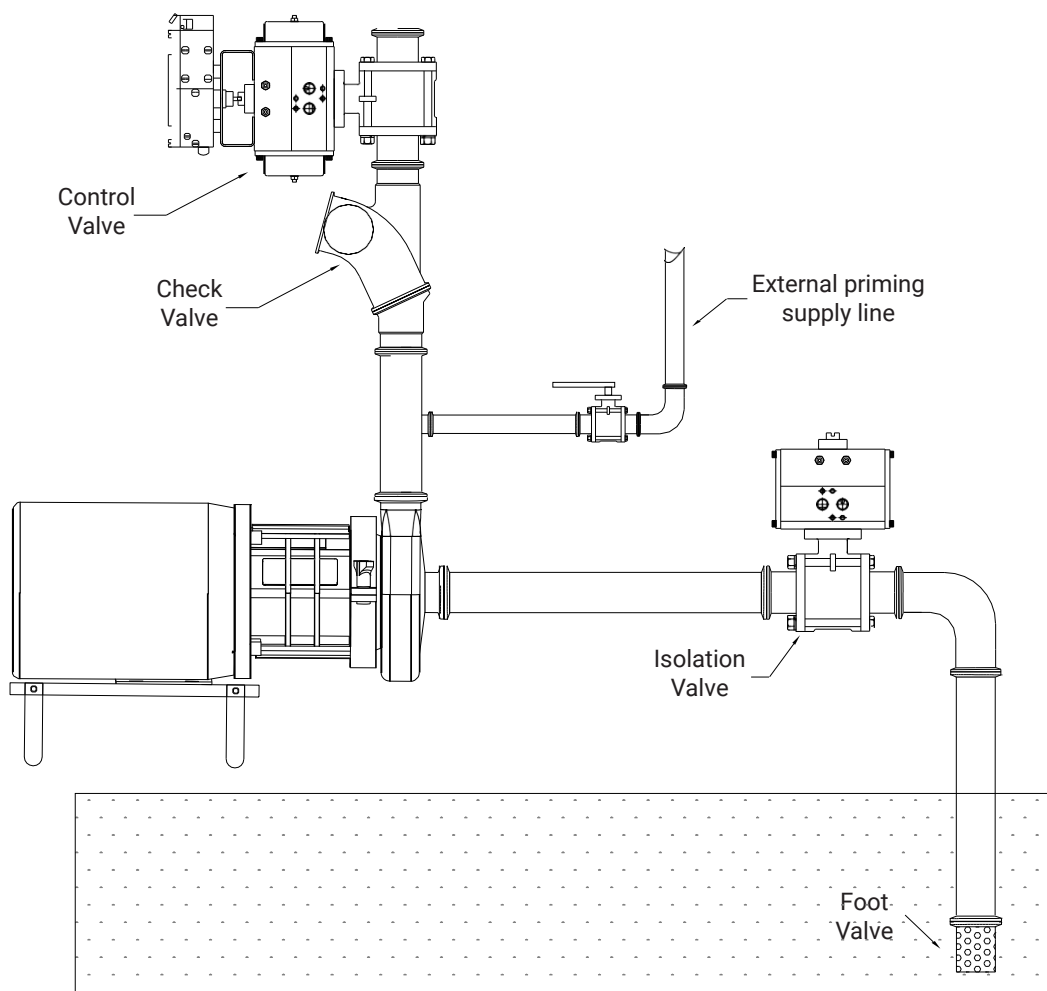
# Operation

## Priming the Pump

### Fluid supply below 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 19.



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. Ensure 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 or discharge line to desired flow.

### Stopping the Pump

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

## Recommended Maintenance

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

### Pump Casing and Impeller

1. Inspect the pump casing and impeller for any signs of possible wear.
2. Replace any stainless components if they show any sign of damage.
3. Inspect the pump casing and impeller frequently if in a severe duty application.

### Gaskets and O-rings

All gaskets and O-rings should be inspected when the pump is undergoing routine maintenance. If the pump is in a severe duty application, the soft goods components (gaskets and O-rings) should be inspected more frequently. Any soft goods component that shows signs of degradation, e.g., cut, swelling, or other mechanical breakdown, should be replaced immediately. In the case of impeller O-ring failure, the threads and surfaces of the stub shaft and impeller should be cleaned with a wire brush in a bath of cleaning solution (acid detergents or simple alkaline soda type detergents). The components should then be rinsed thoroughly with water.

### Mechanical Seals

1. Inspect seals on a regular basis for any signs of leakage or damage. Replace any components that show signs of damage.
2. In severe applications, visually check seal components daily for any signs of leakage or damage. In these severe applications, replace seal components as often as is required by the application.

See troubleshooting guide on pages 32-33 for possible solutions.

## Recommended Maintenance

### Motor Maintenance

Proper motor maintenance is a critical part of maintaining the entire motor/pump assembly. If the motor is not properly maintained, the potential failure of the motor's mechanical components can transmit to the pump and possibly cause issues with sealing and general pump operation.

NEMA Frame Size	Rated Speed (RPM)			
	3600	1800	1200	900
Up to 210	5500 hrs	12000 hrs	18000 hrs	22000 hrs
Over 210 to 280	3600 hrs	9500 hrs	15000 hrs	18000 hrs
Over 280 to 360	2200 hrs	7400 hrs	12000 hrs	15000 hrs

NOTE: Relubrication intervals are for ball bearings. For motors operating at speeds greater than 3600 RPM, contact motor manufacturer for relubrication recommendations.

Severity of Service	Hours per day of Operation	Ambient Temperature (maximum)	Atmospheric Contamination
Standard	8	104°F (40°C)	clean, little corrosion
Severe	16+	122°F (50°C)	moderate dirt, corrosion
Extreme	16+	> 122°F (50°C) * or Class H insulation	severe dirt, abrasive dust, corrosion, heavy shock, or vibration
Low temperature	-	< -21°F (-29°C) **	-

\* Special high temperature grease is recommended (Dow Corning DC44).

\*\* Special low temperature grease is recommended (Areoshell 7).

NOTE: Different grease types are generally incompatible and should not be mixed. Mixing different types can cause lubricant and bearing failure. Thoroughly clean bearing and cavity before changing grease type.

NEMA Frame Size	Volume of Grease per Bearing	
	inches <sup>3</sup>	teaspoon
56C to 143/145TC	0.15	0.5
143/145TC	0.20	0.8
182/184TC	0.30	1.0
213/215TC	0.60	2.0
254/256TC	0.70	2.5
284/286TSC	1.20	3.9

## Disassembly

1. Remove the adapter guards:
  - a. Remove the guard screws using a Phillips screwdriver, remove the two safety guards (**item X3**) attached to the adapter.
2. Remove the front cover from the casing:
  - a. Remove the front cover wing nuts (**item X10**) using an adjustable wrench.
  - b. Remove the front cover O-ring (**item X9A**) from the front cover using a pick tool if necessary.
3. Remove the impeller from the stub shaft:
  - a. Remove the impeller (**item X8**) from the pump stub shaft (**item X4**) by tapping the impeller vanes with a soft mallet in a counterclockwise direction. NOTE: Place an Allen wrench in the leak detection hole in the base of the stub shaft (**item X4**) to lock against the adapter (**item X2**) while loosening the impeller.
  - b. Remove the impeller O-ring (**item X8A**) from the stub shaft (**item X4**) using a pick tool if necessary.
4. Remove the pump casing from the adapter:
  - a. Remove the adapter casing bolts (**item X2A**) using an Allen wrench listed in the required tools chart.
  - b. Lift the pump casing (**item X7**) from the pump adapter (**item X2**).
5. Remove the stationary seal assembly:
  - a. Remove the seal ring gland bolts in a star pattern using the Allen wrench.
  - b. Remove the seal ring gland (**item X6**).
  - c. Remove the stationary outboard gasket (**item P80P**).
  - d. Remove the stationary seal (**item P80N**).
  - e. Remove the stationary inboard gasket (**item P80R**) from the bottom of the pump casing stationary seal cavity (**item X7**). Use a pick tool if necessary.
6. Remove the rotating seal/spring/cup assembly:
  - a. Remove the rotating seal (**item P80**), seal O-ring (**item P80B**), and the seal cup (**item P80A**) from the shaft (**item X4**).
  - b. Inspect the shaft (**item X4**) for any potential damage.
7. Loosen the four adapter bolts from the motor using a box wrench listed in the required tools chart and remove the adapter assembly (**item X1** and **X2**) from the motor.
8. Remove the motor flange (**item X1**) from the adapter (**item X2**) using an Allen wrench to remove the four socket head cap screws (**item X1A**).
9. Remove the stub shaft:
  - a. Remove the set screws on the stub shaft using the Allen wrench.
  - b. Remove the stub shaft (**item X4**) from the shaft sleeve (**item X5**).
10. Remove the shaft sleeve:
  - a. Loosen the shaft sleeve bolts (**item X2A**) using a screwdriver. Slide the shaft sleeve (**item X5**) off of the motor shaft.
  - b. If the shaft sleeve (**item X5**) is resisting removal from the motor shaft, tap the shaft sleeve with a mallet to remove.

# Casing Drain Options

Drain Option A



Drain Option J



Drain Option K



Drain Option D



Drain Option J shown with Diaphragm Valve



Drain Option D shown with Diaphragm Valve



NOTE: All drain options are available with a diaphragm valve as an option. Specifications for the valve need to be provided at the time of request.



# Part Number Key

ExD-Series Centrifugal Pump Part Number Key Example: EX100ACB1AA_A01		Series	Model	Impeller Key	Inlet/Outlet Connection	Elastomer	Seal Type	Frame Size	Options	Motor Type	Electrical	Motor Power (HP RPM)
		EX	100	A	C	B	1	A	A	-	A	01
<b>Series</b>	<b>Code</b>	←	EX	←	←	←	←	←	←	←	←	←
EX	EX											
<b>Model</b>	<b>Code</b>											
1" x 1"	100											
1-1/2" x 1"	110											
2" x 1-1/2"	120											
2-1/2" x 1-1/2"	130											
2-1/2" x 2"	200											
3" x 2"	210											
3" x 2-1/2"	220											
4" x 2-1/2"	230											
<b>Impeller Key</b>	<b>Code</b>	←	-	←	←	←	←	←	←	←	←	←
-	-											
<b>Inlet/Outlet Connection</b>	<b>Code</b>											
Clamp x clamp	C											
Weld x weld	B											
<b>Elastomer</b>	<b>Code</b>											
Nitrile rubber	B											
EPDM/EPDM	E											
Silicone/EPDM	S											
FKM	V											
<b>Seal Type</b>	<b>Code</b>											
Single Mechanical SC/C	1											
Single Mechanical TC/TC	2											
Single Mechanical CER/C	3											
Single Mechanical SC/SC	4											
<b>Frame Size</b>	<b>Code</b>											
56C	A											
143/145TC	B											
182/184TC	C											
213/215TC	D											
254/256TC	E											
<b>Options</b>	<b>Code</b>											
Drain A	A											
Drain D	D											
Drain J	J											
Drain K	K											
None	N											
<b>Motor Type</b>	<b>Code</b>											
Contact Dixon Sanitary for motor options at 800.789.1718.												
<b>Electrical</b>	<b>Code</b>											
1 Ph/60 Hz 115/230V	A											
3 Ph/60 Hz 208-230/460V	B											
3 Ph/60 Hz/575V	C											
3 Ph/50 Hz/190/380V	D											
3 Ph/50 Hz/380/460V	E											
3 Ph/50 Hz/220/380/440V	F											
3 Ph/50 Hz/220/380/415V	G											

Model Number	A	B	C	D	E	F	G	H	I
100/110	4.0	3.8	3.6	3.4	3.2	3.0	2.8	-	-
200/210	7.0	6.6	6.2	5.8	5.4	5.2	4.8	-	-
120/130	6.0	5.8	5.6	5.4	5.2	5.0	4.8	4.6	4.4
220/230	7.3	6.9	6.5	6.0	5.6	5.2	4.8	-	-

## Part Number Key

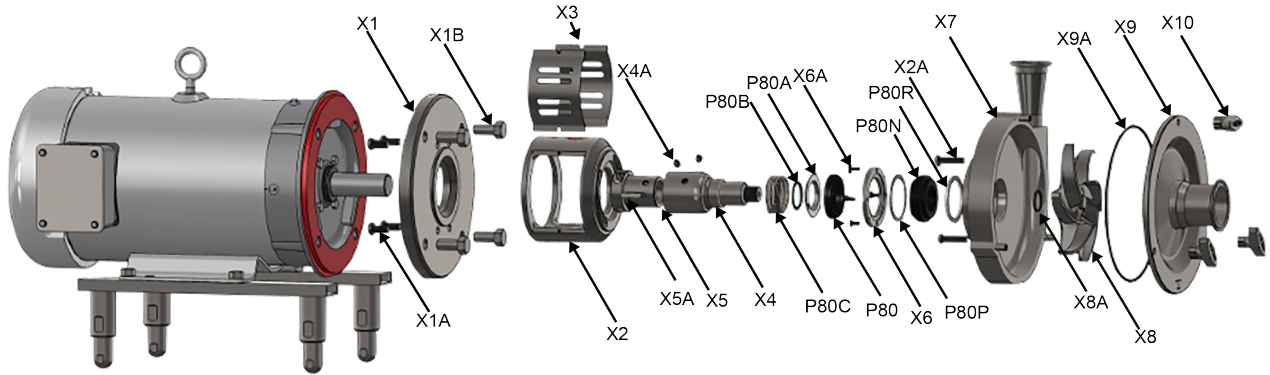
ExD-Series Centrifugal Pump Part Number Key Example: EX100ACB1AA_A01		Series	Model	Impeller Key	Inlet/Outlet Connection	Elastomer	Seal Type	Frame Size	Options	Motor Type	Electrical	Motor Power (HP RPM)
		EX	100	A	C	B	1	A	A	-	A	01
Series	Code											
1/3 1750	01											
1/2 1750	02											
3/4 1750	03											
1 1750	04											
1-1/2 1750	05											
2 1750	06											
3 1750	07											
5 1750	08											
7-1/2 1750	09											
10 1750	10											
15 1750	11											
20 1750	12											
25 1750	13											
30 1750	14											
40 1750	15											
50 1750	16											
60 1750	17											
1/3 3500	18											
1/2 3500	19											
3/4 3500	20											
1 3500	21											
1-1/2 3500	22											
2 3500	23											
3 3500	24											
5 3500	25											
7-1/2 3500	26											
10 3500	27											
15 3500	28											
20 3500	29											
25 3500	30											
30 3500	31											
40 3500	32											
50 3500	33											
60 3500	34											

NOTE: 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.

If there are options that are not listed above, please contact Dixon® Sanitary for availability and pricing.

## Model and Part Numbers



Item #	Part #	Description	Qty
X1 *	X1-100-5614AMF	100-series adapter to motor flange 56C to 143TC and 145TC	1
	X1-100-18AMF	100-series adapter to motor flange 182TC to 184TC	1
X1A	X1A-100-FAB	100-series flange to adapter bolts	4
X1B *	X1B-100-FMB56	100-series flange to motor bolts and lock washers 56TC to 140TC frame	4
	X1B-100-FMB18	100-series flange to motor bolts and lock washers 180TC to 250TC frame	4
X2	X2-100-ADP	100-series adapter	1
X2A	X2A-100-ACB	100-series adapter to casing bolts and shaft sleeve bolts	4
X3	X3-100-GRD	100-series guard set with bolts	1
X4	X4-100-SH	100-series stub shaft	1
X4A	X4A-100-DPSS	100-series shaft dog point set screw	2
X5 *	X5-100-SL56	100-series shaft sleeve for 56C frame	1
	X5-100-SL14	100-series shaft sleeve for 143TC to 145TC frame	1
	X5-100-SL18	100-series shaft sleeve for 182TC to 184TC frame	1
X5A	X5A-100-SKEY	100-series shaft sleeve key	2
X6	X6-100-SG	100-series seal gland	1
X6A	X6A-100-SGB	100-series seal gland bolt	4
P80 *	P80-216CS	carbon rotary seal	1
	P80-216SC	silicon carbide rotary seal	1
	P80-216TC	tungsten carbide rotary seal	1
P80A	P80A-216CP	seal cup	1
P80B *	P80B-216SOE	seal O-ring EPDM	1
	P80B-216SOV	seal O-ring FKM	1
	P80B-216SOB	seal O-ring nitrile rubber	1
P80C	P80C-216SG	seal spring	1
P80P	P80P-216OG	stationary outboard gasket	1
P80N *	P80N-216SC	stationary seal silicon carbide	1
	P80N-216CER	stationary seal ceramic	1
	P80N-216TC	stationary seal tungsten carbide	1
P80R	P80R-216IG	stationary inboard gasket	1
X7	X7-100-CASE-C	100-110-series pump casing with clamp outlet	1
X8	X8-100-A400	100-110-series impeller, 4" max diameter	1
	X8-100-AXXXX	100-110-series trimmed impeller	1
X8A *	X8A-100-IORE	100-series impeller O-ring EPDM	1
	X8A-100-IORV	100-series impeller O-ring FKM	1
	X8A-100-IORB	100-series impeller O-ring nitrile rubber	1
X9 *	X9-100-CVR-C	100-series pump cover with clamp inlet 1"	1
	X9-100-CVR-C	100-series pump cover with clamp inlet 1-1/2"	1
X9A *	X9A-100-COR-E	100-110-series cover/casing O-ring, EPDM	1
	X9A-100-COR-V	100-110-series cover/casing O-ring, FKM	1
	X9A-100-COR-B	100-110-series cover/casing O-ring, nitrile rubber	1
X10	X10-100-WN	cover wing nuts	3

\* Denotes variable parts

## Model and Part Numbers

### ExD 210/ExD 130

Item #	Part #	Description	Qty
X1 *	X1-100-5614AMF	100-series adapter to motor flange 56C and 143C to 145TC	1
	X1-100-18AMF	100-series adapter to motor flange 182TC to 184TC	1
X1A	X1A-100-FAB	100-series flange to adapter bolts	4
X1B *	X1B-100-FMB56	100-series flange to motor bolts and lock washers 56TC to 140TC frame	4
	X1B-100-FMB18	100-series flange to motor bolts and lock washers 180TC to 250TC frame	4
X2	X2-100-ADP	100-series adapter	1
X2A	X2A-100-ACB	100-series adapter to casing bolts and shaft sleeve bolts	4
X3	X3-100-GRD	100-series adapter guard set with bolts	1
X4	X4-100-SH	100-series stub shaft	1
X4A	X4A-100-DPSS	100-series dog point set screw	2
X5 *	X5-100-SL56	100-series shaft sleeve for 56C frame	1
	X5-100-SL14	100-series shaft sleeve for 143TC to 145TC frame	1
	X5-100-SL18	100-series shaft sleeve for 182TC to 184TC frame	1
X5A	X5A-100-SKEY	100-series shaft sleeve key	2
X6	X6-100-SG	100-series seal gland	1
X6A	X6A-100-SGB	100-series seal gland bolt	4
P80 *	P80-216CS	carbon rotary seal	1
	P80-216SC	silicon carbide rotary seal	1
	P80-216TC	tungsten carbide rotary seal	1
P80A	P80A-216CP	seal cup	1
P80B *	P80B-216SOE	seal O-ring EPDM	1
	P80B-216SOV	seal O-ring FKM	1
	P80B-216SOB	seal O-ring nitrile rubber	1
P80C	P80C-216SG	seal spring	1
P80P	P80P-216OG	stationary outboard gasket	1
P80N *	P80N-216SC	stationary seal silicon carbide	1
	P80N-216CER	stationary seal ceramic carbide	1
	P80N-216TC	stationary seal tungsten carbide	1
P80R	P80R-216IG	stationary inboard gasket	1
X7	X7-120-CASE-C	120-130-series pump casing with clamp outlet	1
X8	X8-120-A600	120-130-series impeller, 6" max diameter	1
	X8-120-AXXXX	120-130-series trimmed impeller	1
X8A	X8A-100-IORE	100-series impeller O-ring EPDM	1
	X8A-100-IORV	100-series impeller O-ring FKM	1
	X8A-100-IORB	100-series impeller O-ring nitrile rubber	1
X9 *	X9-120-CVR-C	120-series pump cover with clamp inlet 2"	1
	X9-130-CVR-C	130-series pump cover with clamp inlet 2-1/2"	1
X9A *	X9A-120-COR-E	120-130-series cover/casing O-ring, EPDM	1
	X9A-120-COR-V	120-130-series cover/casing O-ring, FKM	1
	X9A-120-COR-B	120-130-series cover/casing O-ring, nitrile rubber	1
X10	X10-100-WN	cover wing nuts	3

\* Denotes variable parts

## Model and Part Numbers

### Casing Drain Options: ExD 100, 110, 120, 130

Item #	Part #	Description	Qty
X7	X7-100-CASE-C-A	ExD 100-110 pump casing with clamp outlet, Drain A	1
	X7-100-CASE-C-D	ExD 100-110 pump casing with clamp outlet, Drain D	1
	X7-100-CASE-C-J	ExD 100-110 pump casing with clamp outlet, Drain J	1
	X7-100-CASE-C-K	ExD 100-110 pump casing with clamp outlet, Drain K	1
	X7-120-CASE-C-A	ExD 120-130 pump casing with clamp outlet, Drain A	1
	X7-120-CASE-C-D	ExD 120-130 pump casing with clamp outlet, Drain D	1
	X7-120-CASE-C-J	ExD 120-130 pump casing with clamp outlet, Drain J	1
	X7-120-CASE-C-K	ExD 120-130 pump casing with clamp outlet, Drain K	1

### ExD 200/ExD 210

Item #	Part #	Description	Qty
X1	X1-200-1825AMF	200-series adapter to motor flange 182TC to 184TC to 254TC to 256TC	1
X1A	X1A-100-FAB	100-series flange to adapter bolts	4
X1B *	X1B-100-FMB18	100-series flange to motor bolts and lock washers 180TC to 250TC frame	4
X2	X2-200-ADP	200-series adapter	1
X2A	X2A-200-ACB	200-series adapter to casing bolts and shaft sleeve bolts	4
X3	X3-200-GRD	200-series guard set with bolts	2
X4	X4-200-SH	200-series stub shaft	1
X4A	X4-200-DPSS	200-series shaft dog point set screw	2
X5 *	X5-200-SL18	200-series shaft sleeve for 182TC to 184TC frame	1
	X5-200-SL21	200-series shaft sleeve for 213TC to 215TC frame	1
	X5-200-SL25	200-series shaft sleeve for 254TC to 256TC frame	1
X5A	X5A-200-SKEY	200-series shaft sleeve key	2
X6	X6-200-SG	200-series seal gland	1
X6A	X6A-200-SGB	200-series seal gland bolt	4
P80 *	P80-218BCS	carbon rotary seal	1
	P80-218BSC	silicon carbide rotary seal	1
	P80-218BTC	tungsten carbide rotary seal	1
P80A	P80A-218BCP	seal cup	1
P80B *	P80B-218BSOE	seal O-ring EPDM	1
	P80B-218BSOV	seal O-ring FKM	1
	P80B-218BSOB	seal O-ring nitrile rubber	1
P80C	P80C-218BSG	seal spring	1
P80P	P80P-218BOG	stationary outboard gasket	1
P80N *	P80N-218BSC	stationary seal silicon carbide	1
	P80N-218BCER	stationary seal ceramic	1
	P80N-218BTC	stationary seal tungsten carbide	1
P80R	P80R-218BIG	stationary inboard gasket	1
X7	X7-200-CASE-C	200-210-series pump casing with clamp outlet	1
X8	X8-200-A700	200-210-series impeller, 7" max diameter	1
	X8-200-AXXXX	200-210-series trimmed impeller	1
X8A *	X8A-200-IORE	200-series impeller O-ring EPDM	1
	X8A-200-IORV	200-series impeller O-ring FKM	1
	X8A-200-IORB	200-series impeller O-ring nitrile rubber	1
X9	X9-200-CVR-C	200-series pump cover with clamp inlet 2-1/2"	1
	X9-210-CVR-C	210-series pump cover with clamp inlet 3"	1
X9A *	X9A-200-COR-E	200-210-series cover/casing O-ring, EPDM	1
	X9A-200-COR-V	200-210-series cover/casing O-ring, FKM	1
	X9A-200-COR-B	200-210-series cover/casing O-ring, nitrile rubber	1
X10	X10-200-WN	200-series cover wing nuts	4

\* Denotes variable parts

## Model and Part Numbers

### ExD 220/ExD 230

Item #	Part #	Description	Qty
X1	X1-200-1825AMF	200-series adapter to motor flange 182TC to 184TC to 254TC to 256TC	1
X1A	X1A-100-FAB	100-series flange to adapter bolts	4
X1B *	X1B-100-FMB18	100-series flange to motor bolts and lock washers 180TC to 250TC frame	4
X2	X2-200-ADP	200-series adapter	1
X2A	X2A-200-ACB	200-series adapter to casing bolts and shaft sleeve bolts	4
X3	X3-200-GRD	200-series guard with bolts	2
X4	X4-200-SH	200-series stub shaft	1
X4A *	X4-200-DPSS	200-series shaft dog point set screw	2
X5 *	X5-200-SL18	200-series shaft sleeve for 182TC to 184TC frame	1
	X5-200-SL21	200-series shaft sleeve for 213TC to 215TC frame	1
	X5-200-SL25	200-series shaft sleeve for 254TC to 256TC frame	1
X5A	X5A-200-SKEY	200-series shaft sleeve key	2
X6	X6-200-SG	200-series seal gland	1
X6A	X6A-200-SGB	200-series seal gland bolt	4
P80 *	P80-215BCS	carbon rotary seal	1
	P80-218BSC	silicon carbide rotary seal	1
P80A	P80A-218BCP	seal cup	1
P80B *	P80B-218BSOE	seal O-ring EPDM	1
	P80B-218BSOV	seal O-ring FKM	1
	P80B-218BSOB	seal O-ring nitrile rubber	1
P80C	P80C-218BSG	seal spring	1
P80P	P80P-218BOG	stationary outboard gasket	1
P80N *	P80N-218BSC	stationary seal silicon carbide	1
	P80N-218BCER	stationary seal ceramic	1
	P80N-218BTC	stationary seal tungsten carbide	1
P80R	P80R-218BIG	stationary inboard gasket	1
X7	X7-220-CASE-C	220-230-series pump casing with clamp outlet	1
X8	X8-220-A725	220-230-series impeller, 7-1/4" mx diameter	1
	X8-220-AXXX	220-230-series trimmed impeller	1
X8A *	X8A-200-IORE	200-series impeller O-ring EPDM	1
	X8A-200-IORV	200-series impeller O-ring FKM	1
	X8A-200-IOPRB	200-series impeller O-ring nitrile rubber	1
X9	X9-220-CVR-C	200-series pump cover with clamp inlet 3"	1
	X9-230-CVR-C	230-series pump cover with clamp inlet 4"	1
X9A *	X9A-220-COR-E	220-230-series cover/casing O-ring, EPDM	1
	X9A-220-COR-V	220-230-series cover/casing O-ring, FKM	1
	X9A-220-COR-B	220-230-series cover/casing O-ring, nitrile rubber	1
X10	X10-200-WN	200-series cover wing nuts	4

\* Denotes variable parts

### Casing Drain Options - ExD 200, 210, 220, 230

Item #	Part #	Description	Qty
X7	X7-200-CASE-C-A	ExD 200-210 pump casing with clamp outlet, Drain A	1
	X7-200-CASE-C-D	ExD 200-210 pump casing with clamp outlet, Drain D	1
	X7-200-CASE-C-J	ExD 200-210 pump casing with clamp outlet, Drain J	1
	X7-200-CASE-C-K	ExD 200-210 pump casing with clamp outlet, Drain K	1
	X7-220-CASE-C-A	ExD 220-230 pump casing with clamp outlet, Drain A	1
	X7-220-CASE-C-D	ExD 220-230 pump casing with clamp outlet, Drain D	1
	X7-220-CASE-C-J	ExD 220-230 pump casing with clamp outlet, Drain J	1
	X7-220-CASE-C-K	ExD 220-230 pump casing with clamp outlet, Drain K	1

## Repair Kits

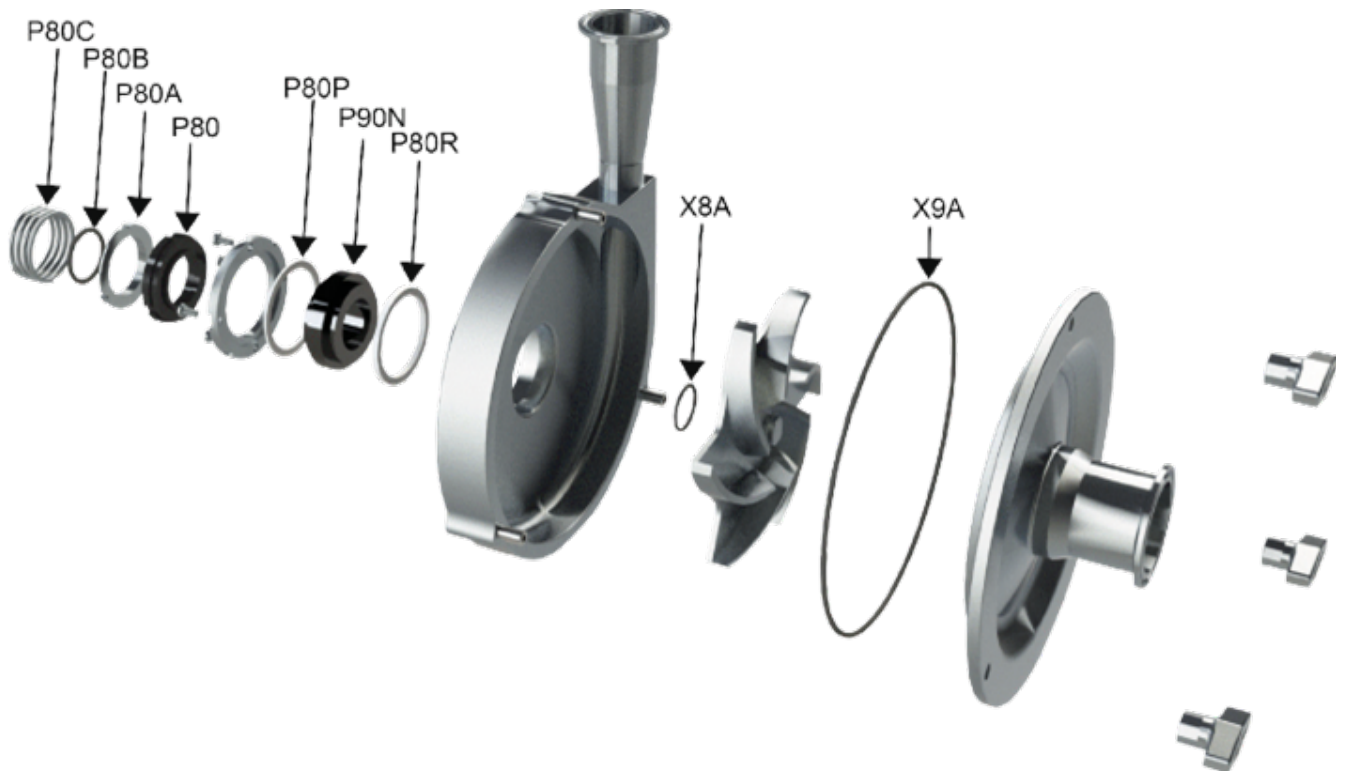
### ExD Series Repair Kits

1 - rotary seal (item P80)  
 1 - seal cup (item P80A)  
 1 - seal O-ring (item P80B)

1 - seal spring (item P80C)  
 1 - seal seat (item P80N)  
 1 - outboard gasket (item P90)

1 - inboard gasket (item P80R)  
 1 - impeller O-ring (item X8A)  
 1 - casing/cover O-ring (item X9A)

Model #	Elastomer	Ceramic/Carbon	SC/Carbon	SC/SC	TC/TC
ExD 100 ExD 110	FKM	PRK-EXD100VCC-1	PRK-EXD100VSC-1	PRK-EXD100VSS-1	PRK-EXD100VTC-1
	nitrile rubber	PRK-EXD100BCC-1	PRK-EXD100BSC-1	PRK-EXD100BSS-1	PRK-EXD100BTC-1
	EPDM	PRK-EXD100ECC-1	PRK-EXD100ESC-1	PRK-EXD100ESS-1	PRK-EXD100ETC-1
ExD 120 ExD 130	FKM	PRK-EXD120VCC-1	PRK-EXD120VSC-1	PRK-EXD120VSS-1	PRK-EXD120VTC-1
	nitrile rubber	PRK-EXD120BCC-1	PRK-EXD120BSC-1	PRK-EXD120BSS-1	PRK-EXD120BTC-1
	EPDM	PRK-EXD120ECC-1	PRK-EXD120ESC-1	PRK-EXD120ESS-1	PRK-EXD120ETC-1
ExD 200 ExD 220	FKM	PRK-EXD200VCC-1	PRK-EXD200VSC-1	PRK-EXD200VSS-1	PRK-EXD200VTC-1
	nitrile rubber	PRK-EXD200BCC-1	PRK-EXD200BSC-1	PRK-EXD200BSS-1	PRK-EXD200BTC-1
	EPDM	PRK-EXD200ECC-1	PRK-EXD200ESC-1	PRK-EXD200ESS-1	PRK-EXD200ETC-1
ExD 220 ExD 230	FKM	PRK-EXD220VCC-1	PRK-EXD220VSC-1	PRK-EXD220VSS-1	PRK-EXD220VTC-1
	nitrile rubber	PRK-EXD220BCC-1	PRK-EXD220BSC-1	PRK-EXD220BSS-1	PRK-EXD220BTC-1
	EPDM	PRK-EXD220ECC-1	PRK-EXD220ESC-1	PRK-EXD220ESS-1	PRK-EXD220ETC-1





## Troubleshooting

Problem	Possible Cause	Suggested Action
Excessive vibration/pump is noisy.	Pump is not level.	Inspect installation of pump and level properly.
	Piping is not supported.	Verify piping support follows recommendations in installation portion of this manual.
	Not enough or no fluid reaching the pump.	Inspect pump to verify there is no blockage. Inspect suction line and shorten or enlarge line size.
	Insufficient NPSH (Net Positive Suction Head) available.	Increase line size and reduce number of obstructions on the pump suction side.
	Impeller and/or shaft is worn.	Inspect the shaft and impeller and if damaged, replace parts.
	Shaft is loose or bent.	Inspect shaft for wear and tighten if needed. Replace shaft if bent.
	Impeller is out of balance.	Inspect impeller for abnormal wear. If wear or damage is localized, replace impeller.
	Foreign material in pump.	Remove any foreign material causing blockage and inspect parts for damage.
	Air is trapped in the pump.	Adjust system as needed to remove any air from the fluid before it reaches the pump inlet.
	Motor bearings are worn out.	Replace motor as needed.
Rapid seal wear.	Improper installation of mechanical seal.	See installation section of the manual. Replace any worn or damaged parts.
	Pump is dry running.	Replace damaged seals and ensure that there is always fluid in the pump casing during operation.
	Abrasive product is being processed.	Contact Dixon® Sanitary at 800.789.1718.
	The shaft is loose or bent.	Inspect shaft for wear and tighten if needed. Replace shaft if bent.
	Water hammer is occurring.	Correct system to prevent any quick starts or stops in fluid flow.
	Improper seal selection.	Contact Dixon Sanitary at 800.789.1718.
Pump leaks.	Bad connection at inlet/outlet.	Inspect for missing union gaskets, loose connections, or damaged ports. Replace worn gaskets and tighten loose connections. Repair damaged ports.
	Front cover wing nuts loose.	Tighten front cover wing nuts as per the assembly section of this manual.
	Impeller O-ring damaged.	Inspect and replace worn or damaged O-ring.
	Seal not installed correctly.	Reassemble seal as per the assembly section of the manual. Replace any worn or damaged parts.
	Seal faces worn or damaged.	Resurface or replace seals.
Pump not delivering fluid.	Pump not primed.	Adjust system so that the pump casing is completely flooded.
	Suction lift is too high.	Lower the level of the pump or raise the level of the supply fluid.
	Air pocket in suction line.	Adjust line to eliminate formation of air pocket. Install air relief valve on suction side of the pump.



## Troubleshooting

Problem	Possible Cause	Suggested Action
Pump not delivering enough capacity.	System head is higher than design head.	Reconfigure the system as to decrease the system head.
	Pump is running in the wrong direction.	Reverse any two leads on the motor electrical connection.
	Speed is too slow.	Ensure motor connections are correct and if using a VFD check the frequency limit.
	Excessive air in fluid.	Make necessary adjustments in the system to ensure air is removed before material reaches the pump.
	Wrong impeller diameter was selected.	Contact Dixon® Sanitary at 800.789.1718.
	Product is more viscous than initially thought.	Contact Dixon Sanitary at 800.789.1718.
Pump delivering too much capacity.	System head is lower than the design head.	Decrease the line size or use throttling valve on the pump discharge to increase the system head.
	Wrong impeller diameter was selected.	Contact Dixon Sanitary at 800.789.1718.
Impeller rubbing on casing/ front cover.	Shaft sleeve was not set properly.	Check shaft sleeve and reset to proper position as given in the assembly section of this manual. Be sure to follow the recommended bolt torque values for the sleeve.
Impeller is damaged.	Foreign material in pump.	Replace the impeller.
	Cavitation is occurring.	Evaluate system to ensure adequate NPSHa based on the pumps performance curves.
Motor overload/excessive power consumption.	Discharge is too high.	Contact Dixon Sanitary at 800.789.1718.
	Impeller is binding.	Inspect pump and check for any damage, misalignment, or interference. Replace any damaged or worn parts.
	Seal is binding.	Inspect pump and replace any damaged or worn parts.
	System head is too low.	Decrease the line size or use throttling valve on the pump discharge to increase the system head.
	Liquid has higher specific gravity or is more viscous than initially thought.	Contact Dixon Sanitary at 800.789.1718.
	Electrical supply, voltage, or frequency incorrect.	Check electrical connections and replace motor if necessary.
	Defective motor.	Contact motor manufacturer for possible warranty or repair. Replace if necessary.



## Limited Warranty

DIXON VALVE AND COUPLING COMPANY, LLC (herein called "Dixon") warrants the products described herein and manufactured by Dixon to be free from defects in material and workmanship for a period of one (1) year from date of shipment by Dixon 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's satisfaction to be defective upon examination by it, provided that such product shall be returned for inspection to Dixon's factory 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 by Dixon, the warranty of such items being limited to the actual warranty extended to Dixon 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; and (d) to normal maintenance services and the replacement of service items (such as washers, gaskets, and lubricants) made in connection with such services. To the extent permitted by 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 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 law.

Other than the obligation of Dixon set forth herein, Dixon disclaims all warranties, express or implied, including but not limited to any implied warranties of merchantability or fitness for a particular purpose, and any other obligation or liability. The foregoing constitutes Dixon's sole obligation with respect to damages, whether direct, incidental or consequential, resulting from the use or performance of the product.

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

