



# 4NS

SUBMERSIBLE 4" NON-CLOG SEWAGE PUMP



### FEATURES

**Impeller:** Cast iron, two vane closed design for high efficiency and maximum wear life. Balanced for smooth operation. Optional bronze impeller available.

**Bronze Wear Ring:** Replaceable to renew the running clearances and efficiencies to original conditions.

**Casing:** Heavy duty cast iron, volute type for maximum efficiency. 4" 125# ANSI cast iron flanged. Adaptable to guide rail mounting system.

**Tandem Seals:** Two independently mounted mechanical face type seals are separated by an oil filled chamber. The oil chamber acts as a barrier to trap moisture and provide time for a planned shutdown and maintenance. The oil provides lubrication to the internal (upper) seal. Carbon rotating and ceramic stationary faces are standard on both internal (upper) and external (lower) seals. Optional materials are available for the lower seals. See the Nomenclature Page for order number changes to order either silicon carbide/silicon carbide faces with Viton or silicon carbide/tungsten carbide faces with Viton elastomers. These are recommended for applications containing fine solids or abrasives as found in parking lot/garage drainage and construction dewatering jobs.

### APPLICATIONS

Heavy duty design features for a wide range of commercial and industrial applications such as:

- Sewage systems
- Flood and pollution control
- Industrial dewatering
- Wastewater treatment plants
- Municipal and subdivision lift stations

### SPECIFICATIONS

#### Pump:

- Solids handling capabilities: 3" maximum.
- Discharge size: 4" 125# ANSI flanged.
- Capacities: up to 1160 GPM.
- Total heads: up to 140 feet.
- Minimum flow: 100 GPM.
- Maximum flow: end of published curve.
- Mechanical seals: 304 stainless steel metal parts, BUNA-N elastomers with carbon/rotary and ceramic/stationary faces standard for upper and lower seals. Optional lower seals are available with Viton elastomers and either silicon carbide/silicon carbide or silicon carbide/tungsten carbide faces.
- Fasteners: 300 series stainless steel.

#### Motor:

- CSA certified motors (Canadian Standards Association)

**Moisture Protection System:** Two-wire, dual moisture sensing probes are located in the oil filled chamber between the inner and outer seals. When connected to a control panel with an optional Moisture Detection System and an alarm it will detect the presence of moisture should the outer seal fail. It will also detect moisture in the motor chamber and provide a warning prior to water levels reaching the bearing or stator.

**Designed for Continuous Operation:** Motor is rated continuous duty submerged condition in water that is 40° C or below. Maximum runtime with pump unsubmerged for 7½-40 HP is 15 minutes. Motor is suitable for 10 starts per hour.

**Bearings:** Ball, single-row, angular contact, Conrad type bearings with a Class 3 internal fit conforming to AFBMA Standard 20 are used. The bearings are greased for life with a premium moisture resistant polyurea thickened grease containing rust inhibitors and suitable for operation over a range of - 25° C to + 120° C.

**Impeller Mounting Screw:** 300 series stainless steel with anti-rotational locking patch.

**Castings:** All iron castings are ASTM A48 class 30 gray cast iron. Optional bronze impeller is ASTM B584 C87600 silicon bronze.

- Three phase motors only
- Available voltages: 200, 230, 400, 460 and 575 volt, 60 Hertz
- HP Range: 7.5 - 40
- Motor shaft is a one-piece design of high strength 416 stainless steel
- All motors are air-filled and designed for continuous duty when fully submerged or for up to 15 minutes operation in air.
- NEMA design "B" with copper windings
- Class "F" stator winding designed for inverter duty
- Moisture System: Two wire dual probe monitoring system constantly monitors seal oil chamber and stator housing for moisture. **Note:** control panel must contain an alarm circuit and alarm device.
- Two (2) normally-closed, automatic reset thermostats connected in series and embedded in adjoining phases.
- Power and sensor cords are 25' standard length, 50' available as an option.
- Motors conform to the latest applicable requirements of NEMA, IEEE, ANSI and NEC standards.

**NOTICE:** Class 10 quick trip overload protection must be provided in control panel.

### AGENCY LISTINGS



Tested to UL 778 and CSA 22.2 108 Standards  
By Canadian Standards Association  
File #LR38549

### MODEL AND MOTOR INFORMATION (All ratings at 3 phase, 60 Hz. Consult factory for 3 phase, 50 Hz applications.)

Order Number	HP	Phase	Volts	RPM	Impeller Dia. (In.)	Impeller Code	S.F. Amps	Service Factor	Full Load Amps	Locked Rotor Amps	Power Cable Size	Sensor Cable Size	Frame Size	Weight (lbs.)
4NS12K2MC	7.5	3	200	1750	7.50	M	27.0	1.15	24.2	183.8	8/4	18/5	210TY	455
4NS12K3MC			230				23.4		21.0	160.0	8/4			
4NS12K4MC			460				11.7		10.5	80.0	8/4			
4NS12K5MC			575				9.4		8.4	64.0	14/4			
4NS12L2KC	10		200		8.00	K	35.6		31.1	186.2	8/4			
4NS12L3KC			230				31.0		27.0	162.0	8/4			
4NS12L4KC			460				15.5		13.5	81.0	8/4			
4NS12L5KC			575				12.3		10.8	64.0	14/4			
4NS12M2GC	15		200		9.00	G	54.8		48.2	256.0	6/4			
4NS12M3GC			230				47.8		42.0	222.0	8/4			
4NS12M4GC			460				23.9		21.0	111.0	8/4			
4NS12M5GC			575				19.1		16.8	88.7	10/4			
4NS12N2EC	20		200		9.75	E	74.8		64.4	342.0	4/4			
4NS12N3EC			230				65.0		56.0	298.0	6/4			
4NS12N4EC			460				32.5		28.0	149.0	6/4			
4NS12N5EC			575				26.0		22.4	119.0	10/4			
4NS12P2CC	25	200	10.38	C	83.6	72.5	394.0	2/4						
4NS12P3CC		230			72.8	63.0	342.0	4/4						
4NS12P4CC		460			36.4	31.5	171.0	4/4						
4NS12P5CC		575			29.1	25.2	137.0	8/4						
4NS12Q2BC	30	200	10.75	B	103.2	89.7	472.0	2/4						
4NS12Q3BC		230			89.6	78.0	410.0	2/4						
4NS12Q4BC		460			44.8	39.0	205.0	2/4						
4NS12Q5BC		575			35.8	31.2	164.0	8/4						
4NS12R2AC	40	200	11.00	A	132.8	114.4	600.0	1/0/4						
4NS12R3AC		230			115.4	99.4	522.0	1/4						
4NS12R4AC		460			57.7	49.7	261.0	6/4						
4NS12R5AC		575			46.2	39.8	209.0	8/4						
4NS13K2DC	7.5	3	200	1150	10.12	D	30.4	1.15	26.5	131.6	8/4	18/5	210TY	455
4NS13K3DC			230				26.4		23.0	114.4	10/4			
4NS13K4DC			460				13.2		11.5	57.2	10/4			
4NS13K5DC			575				10.6		9.2	45.8	14/4			
4NS13L2AC	10		200		11.00	A	40.0		35.0	186.0	8/4			
4NS13L3AC			230				34.8		30.4	161.0	8/4			
4NS13L4AC			460				17.4		15.2	80.7	8/4			
4NS13L5AC			575				13.9		12.2	64.5	12/4			

### NOMENCLATURE DESCRIPTION

#### 1<sup>st</sup> Character - Discharge Size

4 = 4" 125 # ANSI Discharge Flange

#### 2<sup>nd</sup> and 3<sup>rd</sup> Character - Pump Type / Design

NS = Dual Seal Non-Clog Pump with On-Winding Thermal Sensors and Moisture Detection Sensors

#### 4<sup>th</sup> Character - Mechanical Seals

1 = Standard Seal - the upper seal is carbon/rotary and ceramic/stationary, the lower seal is carbon/rotary with ceramic/stationary with BUNA elastomers and 304 stainless steel metal parts.

3 = Optional Lower Seal - silicon carbide/rotary and silicon carbide/stationary with Viton elastomers and 304 SS metal parts is recommended for applications with fine solids or abrasives.

5 = Optional Lower Seal - silicon carbide/rotary and tungsten carbide/stationary with Viton elastomers and 304 SS metal parts is recommended for applications with fine solids or abrasives.

#### 5<sup>th</sup> Character - Motor RPM / Hertz

2 = 1750 RPM / 60 Hz      6 = 1450 RPM / 50 Hz

3 = 1150 RPM / 60 Hz

#### 6<sup>th</sup> Character - Horsepower

K = 7.5    M = 15    P = 25    R = 40

L = 10    N = 20    Q = 30

#### 7<sup>th</sup> Character - Voltage / Phase

2 = 200 / 3      4 = 460 / 3      6 = 380/400 / 3

3 = 230 / 3      5 = 575 / 3

#### 8<sup>th</sup> Character - Impeller Code

A = 11.0"      10 HP 1150 RPM      40 HP 1750 RPM

20 HP 1450 RPM

B = 10.75"      30 HP 1750 RPM

C = 10.38"      25 HP 1750 RPM

D = 10.12"      7.5 HP 1150 RPM      15 HP 1450 RPM

E = 9.75"      20 HP 1750 RPM

G = 9.00"      15 HP 1750 RPM      10 HP 1450 RPM

K = 8.00"      10 HP 1750 RPM      7.5 HP 1450 RPM

M = 7.50"      7.5 HP 1750 RPM

T = SPECIAL TRIM

#### 9<sup>th</sup> Character - Cord Length - Power and Sensor Cords

C = 25' standard      F = 50' Optional

#### 10<sup>th</sup> Character - Options

B = Silicon Bronze Impeller      E = Epoxy Paint

F = Both Bronze Impeller and Epoxy Paint

### APPLICATION DATA

Maximum Solid Size	3"
Minimum Casing Thickness	5/16"
Casing Corrosion Allowance	1/8"
Maximum Working Pressure	100 PSI
Maximum Submergence	200 feet
Maximum Environmental Temperature	40°C (104°F) ambient conditions
Maximum Starts Per Hour	Maximum of 10 evenly spaced starts per hour

### CONSTRUCTION DETAILS

Power Cable - Type	1/0 / 4, 2/4, 4/4, 6/4, 8/4, 10/4, 12/4 SOW or SOOW (see Model Info)
Control / Sensor Cable / Type	Type 18/5 SOW
Power Cable and Cap Assembly	Leads have a BUNA-N grommet in addition to being epoxy encapsulated
Power and Control Cable Lengths	25' standard, 50' optional
Motor Enclosure	Cast iron ASTM A-48 Class 30
Motor Shaft	Series 416 Stainless steel
Motor Design	NEMA design "B" with copper windings and designed to withstand 200 psi water pressure at all seal locations. Air-filled NEMA 210TY frame on 7.5, 10, 15 and 20 HP models. Air-filled NEMA 250TYS frame on 25 - 40 HP models.
Motor Insulation Rating	Class "F" insulation
Motor Thermal Protection	Two (2) normally closed on-winding thermostats open at 320° F (160° C), automatic reset closes at 221° F (105° C).
Motor Overload Protection	Class 10, ambient compensated, quick-trip overload protection must be provided in control panel.
Motor Moisture Protection	Two (2) moisture sensing probes in the oil-filled seal chamber must be connected to a relay in control panel.
Casing	Cast iron ASTM A-48 Class 30
Impeller	Cast iron ASTM A-48 Class 30 or optional cast bronze ASTM B584 UNS C87600.
Impeller Type	Two vane enclosed design for maximum efficiency.
Casing/Impeller/Wear Ring	Replaceable bronze wear ring
External Hardware	Stainless steel

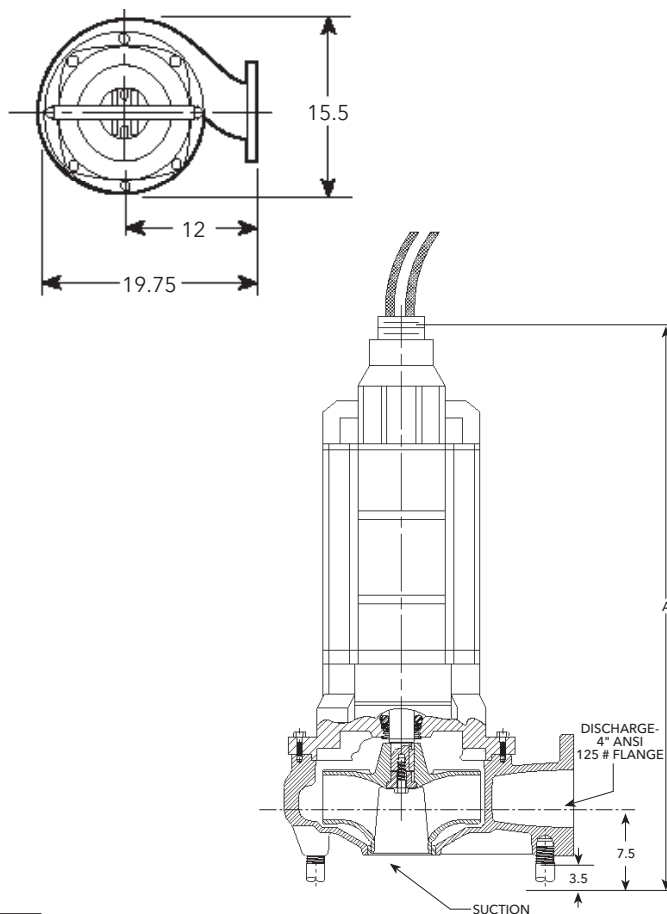
### STANDARD PARTS

Ball Bearing	Lubricated for life bearings are designed for a minimum L10 life of 30,000 hours.	
210 and 250 Frame		Single row Radial (upper)
		Single row Thrust (lower)
Mechanical Seals - Standard	Upper	Carbon/rotary and ceramic/stationary
	Lower	
Mechanical Seals - Optional	Lower	Silicon carbide/rotary and tungsten carbide/stationary
	Lower	Silicon carbide/rotary and silicon carbide/stationary
Standard Motor O-rings	BUNA-N (nitrile)	
Seal Chamber Oil	SAE IOW	

### DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)

HP	RPM	"A" Dimensions (in.)
7½	1750	41.3
10		
15		
20		
25		
30	1150	46.6
40		
7½		
10		41.3



### STANDARD PANEL OPTIONS

Order Number	HP	Volts	S.F. Amps	Simplex 3 Phase Panel Part Number	Duplex 3 Phase Panel Part Number
4NS12K2MC	7.5	200	27	NSS32432	NSD32432
4NS12K3MC		230	23.4	NSS32432	NSD32432
4NS12K4MC		460	11.7	NSS39014	NSD39014
4NS12K5MC		575	9.4	Consult factory for custom quote.	Consult factory for custom quote.
4NS12L2KC	10	200	35.6	NSS33040	NSD33040
4NS12L3KC		230	31	NSS33040	NSD33040
4NS12L4KC		460	15.5	NSS31318	NSD31318
4NS12L5KC		575	12.3	Consult factory for custom quote.	Consult factory for custom quote.
4NS12M2GC	15	200	54.8	NSS34865	NSD34865
4NS12M3GC		230	47.8	NSS34865	NSD34865
4NS12M4GC		460	23.9	NSS32432	NSD32432
4NS12M5GC		575	19.1	Consult factory for custom quote.	Consult factory for custom quote.
4NS12N2EC	20	200	74.8	NSS365115	NSD365115
4NS12N3EC		230	65	NSS365115	NSD365115
4NS12N4EC		460	32.5	NSS33040	NSD33040
4NS12N5EC		575	26.0	Consult factory for custom quote.	Consult factory for custom quote.
4NS12P2CC	25	200	83.6	NSS365115	NSD365115
4NS12P3CC		230	72.8	NSS365115	NSD365115
4NS12P4CC		460	36.4	NSS33040	NSD33040
4NS12P5CC		575	29.1	Consult factory for custom quote.	Consult factory for custom quote.
4NS12Q2BC	30	200	103.2	NSS365115	NSD365115
4NS12Q3BC		230	89.6	NSS365115	NSD365115
4NS12Q4BC		460	44.8	NSS33750	NSD33750
4NS12Q5BC		575	35.8	Consult factory for custom quote.	Consult factory for custom quote.
4NS12R2AC	40	200	132.8	Consult factory for custom quote.	Consult factory for custom quote.
4NS12R3AC		230	115.4	Consult factory for custom quote.	Consult factory for custom quote.
4NS12R4AC		460	57.7	NSS34865	NSD34865
4NS12R5AC		575	46.2	Consult factory for custom quote.	Consult factory for custom quote.
4NS13K2DC	7.5	200	30.4	NSS33040	NSD33040
4NS13K3DC		230	26.4	NSS32432	NSD32432
4NS13K4DC		460	13.2	NSS31318	NSD31318
4NS13K5DC		575	10.6	Consult factory for custom quote.	Consult factory for custom quote.
4NS13L2AC	10	200	40	NSS3750	NSD33750
4NS13L3AC		230	34.8	NSS33040	NSD33040
4NS13L4AC		460	17.4	NSS31723	NSD31723
4NS13L5AC		575	13.9	Consult factory for custom quote.	Consult factory for custom quote.

# Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

**For more information on how Xylem can help you, go to [www.xylem.com](http://www.xylem.com)**



Xylem Inc.  
2881 East Bayard Street Ext., Suite A  
Seneca Falls, NY 13148  
Phone: (866) 325-4210  
Fax: (888) 322-5877  
[www.xylem.com/goulds](http://www.xylem.com/goulds)

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