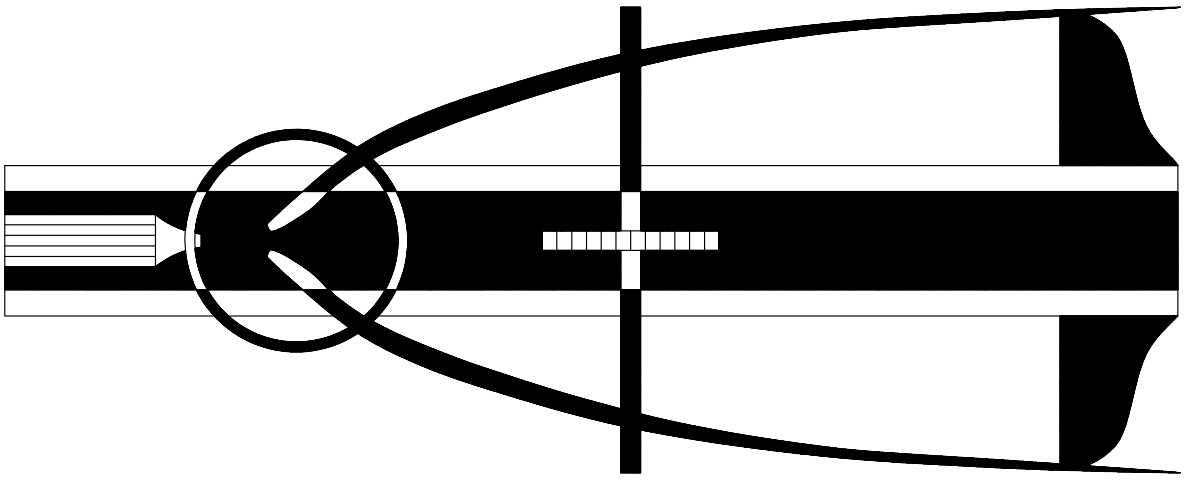
norweco®

DUPLEX MODEL
DOMESTIC PUMPING STATION

SPECIFICATIONS

GENERAL SPECIFICATIONS

The contractor shall furnish and install one complete duplex model domestic pumping station, including all applicable equipment, as described in the following specifications. The duplex pumping station shall collect wastewater or stormwater and transfer it to downstream processes or locations while providing reserve pumping capacity and extended pump life. The duplex pumping station shall be engineered to be readily serviceable from grade and shipped to the jobsite as a unitized, factory-built assembly to simplify installation. Principal items of equipment supplied shall include a duplex polyethylene pump basin, lockable access cover, compression clamp, safety/service guard, inlet and outlet pipe sealing grommets, two (2) submersible centrifugal pumps, electro-mechanical float switches, waterproof junction box, electrical control center, prefabricated discharge piping assembly, ball check valves, pump disconnect fittings, throttling valve, pump lifting cables and all other necessary internal piping and fittings.



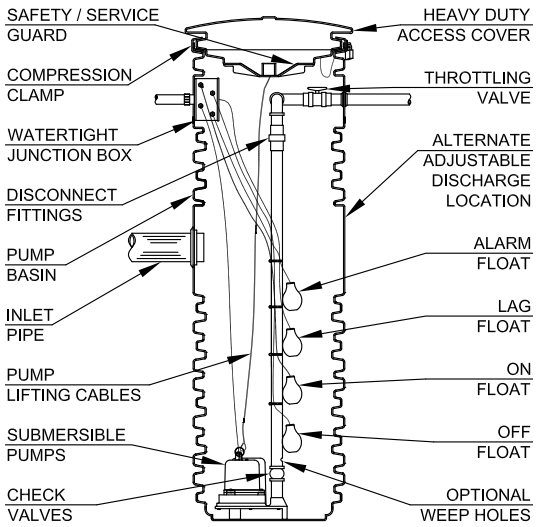
OPERATING CONDITIONS

The duplex model domestic pumping station shall be an integral part of the overall wastewater or stormwater treatment and disposal system. The pumping station shall accumulate and temporarily retain flow in the pump basin until sufficient volume is collected to actuate a submersible pump, as determined by the elevation of the float switches. Design of the pump basin shall allow the discharge piping to be installed at the standard elevation, or when required, below the frost line with added weep holes. The specific pump model furnished shall be selected to have sufficient delivery characteristics at the total dynamic head and solids handling capability required by the specific application. During operation, each submersible pump shall be capable of delivering _____ gallons per minute (GPM) against a total dynamic head (TDH) of _____ feet with a solids passage size of _____ inches. Use of the duplex domestic pumping station, when installed by an authorized agent, shall be approved by the local governing regulatory agency.

DUPLEX MODEL

DUPLEX PUMP BASIN

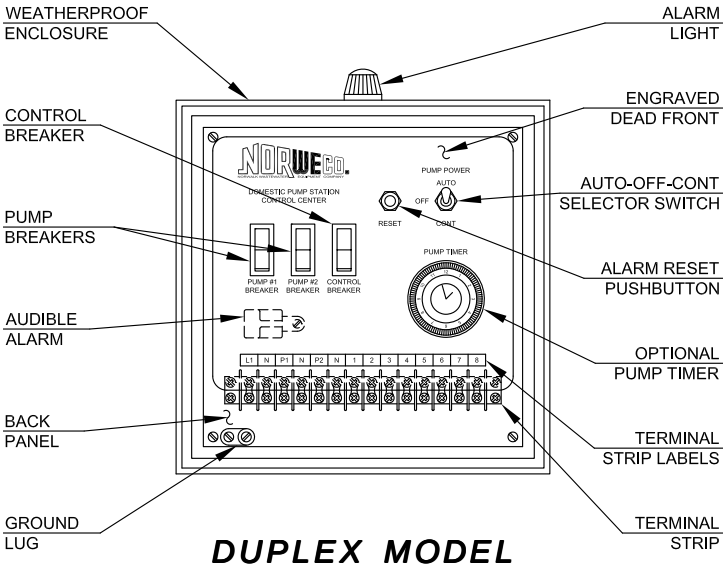
The pumping station shall be enclosed within a specifically designed and engineered basin to secure the pump, piping and internal electrical equipment. The basin shall be an integrally molded, heavy duty, one-piece unit, constructed of corrosion resistant, UV stabilized polyethylene for maximum strength and durability. The basin shall be designed and manufactured to be watertight at burial depths up to 12 feet. For discharge below the frost line, the pump basin shall be constructed with an alternate adjustable discharge location. A molded, one-piece, heavy duty, removable access cover with moisture drip lip shall secure the basin and internal components during normal operation. The cover shall be installed with the moisture drip lip 3" above finished grade and secured to the pump basin by a compression clamp with lock tab to prevent unauthorized access. The basin shall be equipped with a safety/service guard installed below the access cover to prevent accidental entry into the pump basin. The safety/service guard shall rest on the upper most internal rib of the pump basin and shall be securely connected to the basin by a stainless steel retainer cable to prevent loss or theft. Optional extension risers shall extend the access cover to grade for deeper installations. Optional ring sections, installed below the basin inlet, shall increase the liquid storage capacity of the pumping station for applications where additional capacity is required. The entire pump basin shall also be available in segmented sections for shipment via parcel delivery service. Field assembly of the individual sections shall allow use of the duplex pumping station in a variety of installations, including remote locations. Each joint within the segmented pump basin, extension risers or ring sections shall be sealed watertight with a polyisoprene gasket and compression clamp secured with bolted lock tab.



DUPLEX MODEL
DOMESTIC PUMPING STATION

DUPLEX ELECTRICAL CONTROLS

The duplex electrical controls shall provide for automatic operation of the submersible pumps in proportion to the hydraulic flow. The controls shall alternate pump operation to assure equal wear and provide lag pump activation when flow conditions require. A rising liquid level within the basin shall cause the "on" float to initiate a lead pump cycle. Lowering of the liquid level by the lead pump shall cause the "off" float to end the pump cycle. Automatic pump alternation shall occur with each pump cycle. In the event of excessive incoming flow, a third float switch shall activate the lag pump to increase the pump station output. A fourth float switch shall activate a high water alarm if the liquid level rises to within 6" of the basin inlet invert. Control center options shall include a programmable timer for pump operation. The electrical control center shall be provided in a grounded NEMA 4 enclosure for mounting in the vicinity of the pumping station to allow ready access during service. The control center shall include a clearly labeled terminal strip with individual connections for all field wiring. All duplex electrical control centers shall be manufactured entirely from UL Listed or Recognized components. When the duplex pumping station is installed in conjunction with a Singulair Bio-Kinetic wastewater treatment system, pumping station electrical controls shall be combined with the aerator controls of the Singulair system. The use of Integrated System Controls shall provide simplified and consolidated wiring of all electrical controls into a single enclosure.



DUPLEX MODEL
ELECTRICAL CONTROL CENTER

SPECIFICATIONS

DUPLEX SUBMERSIBLE PUMPS (Reference Data Chart Below)

❑ **SUMP AND EFFLUENT PUMPS** Two Norweco Model _____ pumps wired for 115 volt, single phase, 60 cycle operation shall be installed in the duplex domestic pumping station. Each pump motor shall be _____ horsepower, operating at _____ RPM. All openings in the flow path of the submersible pumps shall be of sufficient size to permit the passage of a _____ diameter sphere. The submersible pump motors shall contain moisture resistant windings and shall be securely mounted inside oil-filled, watertight housings for maximum pump life. Each pump shall be designed to be non-overloading throughout the entire pump curve. The stator housing casings and oil housing casings shall be of high grade cast iron or thermoplastic construction. The impellers shall be non-clog, recessed or enclosed type of cast iron, bronze or thermoplastic construction and all external fasteners shall be stainless steel. Each pump shall be provided with a rotating mechanical shaft seal, consisting of one stationary and one rotating ring held in contact by a spring.

❑ **HIGH HEAD EFFLUENT PUMPS** Two Norweco Model _____ pumps wired for 115 volt, single phase, 60 cycle operation shall be installed in the duplex domestic pumping station. Each pump motor shall be _____ horsepower, operating at _____ RPM. All openings in the flow path of the submersible pumps shall be of sufficient size to permit the passage of a _____ diameter sphere. Each pump cord shall be ten feet long and carry a SJOW designation, as recognized by UL and CSA for use in wastewater applications. The pump motors shall contain built-in overload and electrical surge protection with waterproof epoxy potted windings and shall be in compliance with IP58 (protected against dust and continuous submerging) of the IEC34 Standard. When operating between the rated horsepower and service factor horsepower, each motor speed shall be not less than the rated synchronous speed. The high head effluent pumps shall be capable of operating continuously in a total submerged condition at the rated load. Each motor assembly shall have corrosion resistant, stainless steel exterior construction.

❑ **HIGH HEAD GRINDER PUMPS** Two Norweco Model _____ pumps wired for 230 volt, single phase, 60 cycle operation shall be installed in the duplex domestic pumping station. Each pump motor shall be _____ horsepower, operating at _____ RPM. The submersible grinder pumps shall be designed to reduce all materials found in normal domestic and light industrial sewage into a finely ground slurry. The submersible pump motors shall contain moisture resistant windings and shall be mounted in oil-filled, watertight housings. Each pump shall be designed to be non-overloading throughout the entire pump curve. The stator housing casings and oil housing casings shall be of high grade cast iron construction. Each pump impeller shall have recessed construction for increased bearing life. The grinder impellers and shredding rings of the pumps shall be constructed of hardened 440 stainless steel for maximum durability. Each grinder pump shall be provided with double tandem mechanical shaft seals in an oil-filled seal chamber for continuous lubrication. An optional seal leak probe shall detect water in each seal chamber and activate a seal failure indicator in the electrical control center.

DATA CHART (Reference Individual Specifications)

PUMP TYPE	PUMP MODEL	VOLTAGE	HP	RPM	SOLIDS PASSAGE SIZE	DISCHARGE SIZE (NPT)	MAXIMUM DELIVERY (GPM)	MAXIMUM TDH (FT)
Sump and Effluent	SC103	115	1/3	1550	3/4"	1 1/2"	66	32
Sump and Effluent	SC104	115	4/10	1600	3/4"	1 1/2"	80	32
High Head Effluent	HB105	115	1/2	3450	1/16"	1 1/4"	28	125
Sump and Effluent	SC105	115	1/2	3450	3/4"	1 1/2"	57	80
High Head Grinder	GB320	230	2	3450	Not Applicable	1 1/4"	40	105

DISCHARGE PIPING AND REMOTE REMOVAL SYSTEM

The pump discharge piping shall be constructed of solvent welded schedule 80 PVC pipe and fittings. A ball check valve and a threaded disconnect fitting shall be provided downstream of each pump discharge. Downstream of the disconnect fittings, one schedule 80 PVC throttling valve shall be installed to throttle the pump discharge rate or isolate the downstream piping in the event either pump must be removed for service. The disconnect fittings and throttling valve shall be installed in the discharge line near the top of the pump basin for easy access and service, eliminating the need for entry into the wet well. An EPDM sealing grommet shall be utilized to seal the openings in the pump basin for both the discharge and inlet piping.

EXTENSION RISERS AND RING SECTIONS

For installations where the inlet invert of the pump basin is more than 34" below finished grade, optional extension risers shall be installed. When a riser is used, the internal safety/service guard shall be mounted in the uppermost rib of the riser, directly below the access cover. If additional basin capacity is required, ring sections shall be available for installation below the inlet invert. Risers and rings shall be available in 6" increments from 6" to 72" height. Extension risers and ring sections shall be constructed of corrosion resistant, UV stabilized polyethylene and shall be of the same design and structural characteristics as the pump basin. To form a watertight connection, all extension risers and ring sections shall be connected to the pump basin and sealed with a polyisoprene gasket and injection molded compression clamp secured with bolted lock tab.

ONE YEAR LIMITED WARRANTY

The manufacturer shall provide a limited warranty against defects in material and workmanship under normal use and service for a period of one year. The limited warranty shall cover all components of the pumping station purchased from the manufacturer, including pump basin, safety/service guard, access cover, compression clamp, optional extension risers, optional ring sections, submersible pumps and electrical controls. A detailed copy of the warranty shall be provided to the regulatory agency, contractor or customer as required.

EQUIPMENT MANUFACTURER

The equipment specified herein shall be the product of a manufacturer having a minimum of seven years experience in the construction of prefabricated wastewater treatment equipment and systems. Bids shall be prepared on the basis of the equipment and material specified herein for purposes of determining the low bid. This is not done, however, to eliminate other products of equal quality and efficiency. If equipment is to be substituted, approval of such substitution must be made prior to the execution of any order. It is assumed that substitution shall result in a reduction of cost to the contractor and that if accepted, these savings shall be passed along by a reduction in the base bid.

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220 REPUBLIC STREET
NORWALK, OHIO, USA 44857-1196
TELEPHONE (419) 668-4471
FAX (419) 663-5440
www.norweco.com