

TYPICAL SPECIFICATION FOR CLS DUPLEX VACUUM HEATING PUMP

Furnish one Duplex Automatic Return Line Vacuum Heating Pump Model _____. The pump shall be manufactured by the NES Company, Pine Brook, NJ. Each condensate pumping unit shall be driven by a motor rated for _____horsepower. Each air pumping unit shall be driven by a motor rated for ____ horsepower. Motors are to be general purpose type suitable for ___phase, _____cycle, _____volts A.C.

Each condensate pump shall have a capacity of not less than _____ gallons of condensate per minute at 70°F from _____inches mercury vacuum against _____PSI discharge pressure. Each air pumping unit shall have a capacity of not less than _____ cubic feet per minute of dry air at 70°F and at _____inches mercury vacuum. The equipment must be capable of delivering simultaneously the full rated condensate and air capacities as defined above.

Equipment to be included is one receiving tank, two condensate pumping units, two air pumping units, accessories and control as listed below.

The pump shall of the type in which condensate and air are separated in the receiving tank under vacuum, condensate being pumped by centrifugal elements; air and vapor being pumped by rotary type vacuum elements in which gravity flow of condensate is used as the displacement medium. Separate hurling or sealing water compartment shall not be required.

The receiving tank is to be _____gallon capacity cast iron.

Accessories to be supplied by the pump manufacturer shall consist of inlet strainer, water level gauge glass, air inlet check valves, vacuum gauge, thermometer, and vacuum relief valve.

Condensate pumps are to be controlled by a single mechanical alternating float switch allowing alternate operation of the 2 pumps under normal operation; both pumps together under peak load conditions, and function as a single switch when only one pump is in service.

Vacuum pumps are to be controlled by 2-pole diaphragm type vacuum switches to provide primary and back-up operation. The primary switch is to be set to cycle between 3 and 8 inches Hg vacuum and wired to electrically alternate the vacuum pumps in normal operation. The back-up vacuum switch will cycle between 2 and 8 inches Hg vacuum and operate both pumps together under start-up and peak load conditions and insure single operation when only one pump is in service.

The installing contractor shall secure from the pump manufacturer drawings and installation instructions which must be submitted to the specifying Engineer for approval prior to actual installation. Upon approval, the installation is to be made in full accordance with the manufacturer's recommendations.

MECHANICAL AND ELECTRICAL SPECIFICATIONS

AIR PUMPS: industrial type rotary liquid ring vacuum pump with shrouded rotor. Rotating member is dynamically balanced for quietness and freedom from vibration.

Air pump sizes MVF15 through MHF120 have rotors rigidly mounted on motor shaft and the pump and motor assembly is mounted on receiving tank. Air pump sizes SC2 and SC3 are separately mounted on bases and are driven through flexible couplings by motors.

WATER PUMPS: Bronze fitted centrifugal pump with single suction impeller rigidly mounted on motor shaft. Pump casing fitted with renewable bronze sealing ring and mechanical shaft seal. Suction passages designed for unusually low velocities to prevent vapor binding and cavitation. Rotating member

is dynamically balanced for quietness and freedom from vibration. Pump and motor assembly is mounted on receiving tank.

Suction butterfly valves are available for all condensate pumps. These allow one pump to be removed from service without the need to shut down the entire unit. Special blanking flanges are not required.

RECEIVING TANK: Cast iron with air separating chambers.

RETURN LINE CONNECTIONS: Center of return lines are located at following elevations listed by tank size:

Receiver Size	Inlet Elevation	Inlet Size
15 Gal.	9.5"	2" NPT
25 Gal.	10"	2" NPT
37 Gal.	14"	3" NPT
57 Gal.	14"	3" NPT
80 Gal.	16"	4" NPT
125 Gal.	18"	4" NPT or 6" ASA Flanged
160 Gal.	24-1/4"	4" NPT or 6" ASA Flanged
260 Gal.	26-1/2"	4" NPT or 6" ASA Flanged

STRAINER: Heavy duty type with lift out basket. Strainer screen is stainless steel mesh and is easily removable for cleaning.

SEPARATOR FLOAT VALVE: Bronze fitted valve actuated by bronze rod and seamless copper float. Valve is self aligning and self cleaning type with hemispherical monel metal closure.

RELIEF VALVE: Bronze air relief valve is supplied for pumps to be operated below 15" Hg vacuum. No relief valve is needed nor supplied if pump is to be operated at or above 15" Hg.

MOTORS: Open drip protected ball bearing type made by leading motor manufacturers. Single phase motors are capacitor type, polyphase motors are squirrel cage induction type. Motors are provided with heavy duty bearings and are designed to operate under continuous full load with minimum temperature rise.

VACUUM SWITCH: Double pole switch. Diaphragm type. Switch is easily adjustable.

FLOAT SWITCH: Two pole type actuated by stainless steel rod and seamless ball float. Modified and Full Duplex units use mechanical alternating float switch.

STARTING SWITCHES: Across-the-line magnetic type in general purpose steel enclosures. Starters provide thermal overload protection and under-voltage release. Starters for air pumps are supplied with three position selector switches to provide "Hands-Off-Automatic" control. Starters for water pumps on Duplex and Modified Duplex outfits are supplied with three position selector switch marked "Hand-Off-Automatic."

WIRING: Motor connections are made up for voltage of the order.

COMPONENTS AND ACCESSORIES SUPPLIED AS STANDARD EQUIPMENT

Item	Single	Modified Duplex	Duplex
AIR PUMP WITH MOTOR	1	1	2
WATER PUMP WITH MOTOR	1	2	2
RECEIVING TANK	1	1	1
SEPARATOR FLOAT VALVE	1	1	1 or 2
RELIEF VALVE-FOR OPERATION BELOW 15" Hg	1	1	1
RELIEF VALVE-FOR OPERATION ABOVE 15" Hg	none	none	none
VACUUM SWITCH	1	1	2
FLOAT SWITCH	1	1	1
ALTERNATING WATER PUMP CONTROL	no	yes	yes
WATER GAUGE GLASS	1	1	1
COMPOUND GAUGE	1	1	1
THERMOMETER	1	1	1
AIR SUCTION CHECK VALVE	1	1	2
AIR DISCHARGE SILENCER - IF REQUIRED	1	1	1
COMPANION FLABGES	-as required-		

OPTIONAL EQUIPMENT

INLET STARINER WITH LIFT OUT BASKET ELEMENT	1	1	1
CONTROL PANEL WITH MAGNETIC STARTES AND REQUIRED CONTROLS	1	1	1
CONTROL PANEL MOUNTED AND WIRED ON RECIEVER	1	1	1
SUCTION BUTTERFLY VALVUES FOR CONDENSATE PUMPS	1	2	2