# Vent-Rite

DUNHAM LLC
THE STEAM HEATING PROFESSIONALS

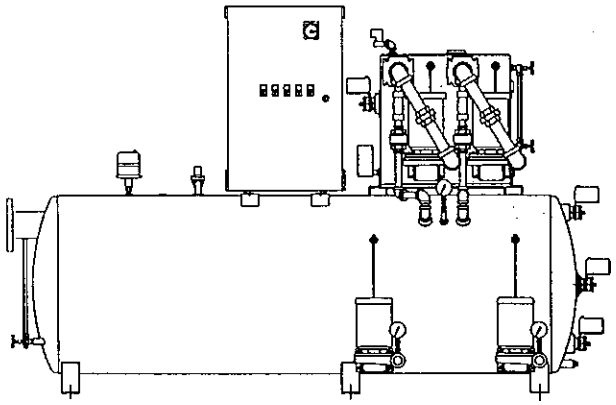
## PUMP SECTION

**BOILER FEED/VACUUM PUMPS - Type AWVR & AWVRD**

### INTRODUCTION

The MEPCO Type AWVR Boiler Feed/Vacuum pump is a compact unit that functions both as a vacuum pump and a boiler feed pump. Its design makes it an ideal choice for retrofit situations involving small capacity boilers while saving precious boiler room space.

Boiler feed pump packages are supplied with all necessary controls and accessories. As a safety feature a low water cutoff switch is furnished to shut off the pump if the water level in the tank falls below the prescribed level. A Nema 1 control panel is furnished with magnetic starter with overload protection.



Typical AWVRD (shown above)

## CONSTRUCTION FEATURES

**CENTRIFUGAL PUMPS -** The centrifugal pumps employed are of MEPCO design and manufacture and are of the close-coupled type with mechanical seals suitable for temperatures to 225 degrees F and 175 PSI. The pumps are bronze fitted and suitable for working pressures to 175 PSI. The hydraulic design is such that they have a very low NPSH. Motor speeds for vacuum pumps are 3450 RPM. This results in low brake horsepower required.

**TANKS -** Both accumulator and air separator tanks are of heavy gauge copper bearing steel. The accumulator tank is furnished with convex heads, inlet baffle and thermometer. At the maximum condensing rate, receivers are capable of a minimum of 15 minutes storage. The air separator tank is equipped with a high temperature limit switch. Both are furnished with a water level gauge.

**MOTORS -** Name brand motors are used for the centrifugal pumps. They are 115-230/1/60, 208-230-460/3/60. They are open drip-proof with end covers to protect them as they are mounted in a vertical position. Three (3) horsepower and larger are available in three phase only.

**ACCESSORIES -** All units are supplied with a strainer for the accumulator tank inlet, pressure gauges for the discharge of the centrifugal pumps and a vacuum gauge for the accumulator. The following components can be furnished as standard options:

- Combination starters with disconnect or circuit breakers.
- An electric alternator to transfer the operation from one pump to the other sequence. Additionally it provides automatic standby service whereby if one pump is inoperative, the second pump starts automatically.
- Air gap for water make-up.
- Three valve by-pass for water make-up valve.
- Lead/Lag switch.

*NOTE: MEPCO reserves the right to make revisions to its products, their specifications, this bulletin and related information without notice.*

**CONTROLS -** All units are furnished with necessary controls. In addition to a high temperature limit switch, the vacuum portion is equipped with reverse acting float switch and electric solenoid for make-up of water lost through evaporation.

The boiler feed portion is also equipped with an electric solenoid. The valve is sized and adjusted to maintain proper water level in the receiver. It is activated by a reverse acting float switch.

# CONSTRUCTION FEATURES CONTINUED

**CONTROLS** - As a safety feature a low water cut-off switch is furnished to deactivate the pump if the water level in the tank falls below the prescribed level.

A high water alarm contact switch prevents condensate from deluging the system by activating the air pump to draw excess condensate from the accumulator to the hurling tank and drain. Extra contacts are available for end user to provide bell and lights to warn of this condition.

A vacuum switch is furnished on the accumulator tank, this one switch activates both pumps on a duplex, speeding up the recovery time of this important function.

A control panel is furnished that includes magnetic starters and a three position selector switch for the vacuum portion and a similar panel is provided for the boiler feed portion.

**NON-STANDARD UNITS -** All standard Boiler Feed/Vacuum units are duplex (two air pumps - two condensate pumps). However, simplex, triplex and an unlimited variety of optional air and water configurations are available.

This design flexibility is ideal for users who wish to increase storage capacity or boost vacuum capacity for older systems. To obtain a custom pump package the following information is required; desired GPM, CFM, PSI and accumulator tank size.

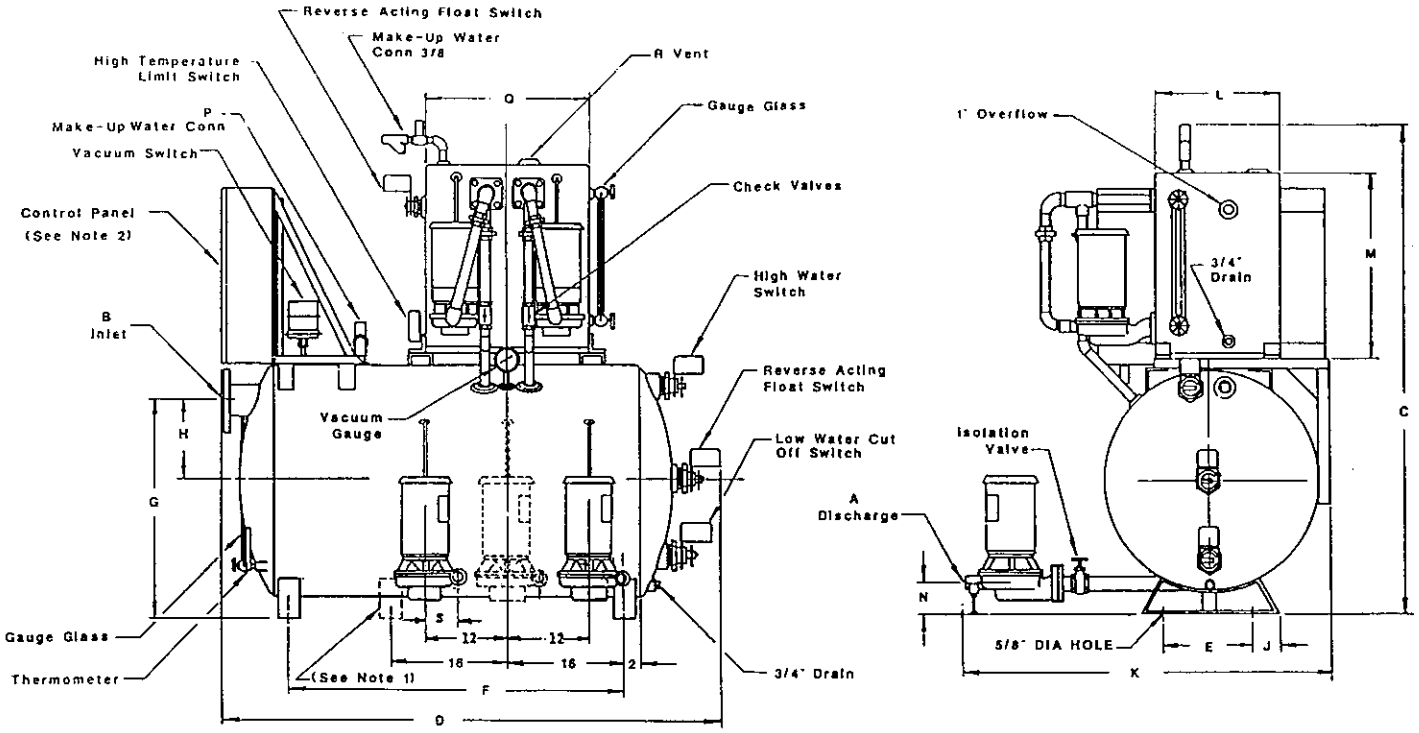
The factory does not recommend the selection of accumulator tanks smaller than those shown below for a given GPM. For custom packages, contact factory.

# CAPACITIES

| **Pump Size** | 10 | 20 | 30 | 40 | 60 |
|---|---|---|---|---|---|
| **Sq. Ft. Radiation EDR** (1 EDR = 240 BTU) | 10,000 | 20,000 | 30,000 | 40,000 | 60,000 |
| **Water GPM / per pump** | 15 | 30 | 35 | 40 | 60 |
| **Air CFM / per pump** | 6.1 | 8.2 | 14.4 | 22 | 36 |
| **Boiler Horsepower** | 71 | 143 | 214 | 286 | 429 |
| **Hurling Tank-Gallon** | 29 | 39 | 39 | 80 | 80 |
| **Accumulator Tank-Gallon** (dimensions) | 94 (24x48) | 150 (30x48) | 225 (30x84) | 300 (36x66) | 450 (48x60) |
| **Air Horsepower** | 1 | 1-1/2 | 3 | 3 | 5 |
| **Water Horsepower** (20 PSI) | 1/2 | 3/4 | 3/4 | 1 | 1-1/2 |
| **Water Horsepower** (30 PSI) | 3/4 | 1 | 1 | 1-1/2 | 2 |
| **Water Horsepower** (40 PSI) | 1 | 1-1/2 | 1-1/2 | 3 | 5 |

***Higher discharge pressures available**

# DIMENSIONAL DATA




NOTES: 1) A third saddle is used on tanks over 60" long, for additional support.

2) When space permits, control panels may be mounted on front of package toward the left end of accumulator.

3) Roughing in dimensions only, not to be used for installation. Certified dimensions available upon request from factory.

| | B | C | D | E | F | G | H | J | K | L | M | P | Q | Est. Ship. R | Wgt. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1010- | 3 | 59 | 67 | 8 | 44 | 22-1/2 | 7-1/4 | 4-3/4 | 35 | 14 | 22 | 3/4 | 22 | 2 | 856 |
| 2020- | 4 | 67 | 67 | 8 | 44 | 28-1/2 | 10-1/4 | 6-1/2 | 40 | 17 | 24 | 3/4 | 22 | 2 | 963 |
| 3030- | 4 | 67 | 103 | 8 | 80 | 28-1/2 | 10-1/4 | 6-1/2 | 45-1/2 | 17 | 24 | 3/4 | 22 | 2 | 1158 |
| 4040- | 5 | 74 | 85 | 20 | 62 | 34-1/2 | 13-1/4 | 2-1/4 | 51-1/2 | 26 | 25 | 3/4 | 30 | 2-1/2 | 1359 |
| 6060- | 6 | 86 | 77 | 20 | 56 | 45-1/2 | 18 | 5-3/4 | 63-1/2 | 26 | 25 | 1-1/4 | 30 | 2-1/2 | 1850 |

For dimensions (N), (S) and discharge sizes (A), see chart below.

# PUMP AND MOTOR SELECTIONS

The selected centrifugal pumps for the vacuum producing portion of the AWVR exceed the 0.3 - 0.5 CFM per 1,000 EDR recommendation set by ASHRAE. The capacity of the boiler feed centrifugal pumps is a minimum of two times the maximum condensing rate with three times the maximum on smaller units.

| MODEL | WATER PUMP | N | S | AIR PUMP |
|---|---|---|---|---|
| 101020 | 1/2 HP 1-1/4" G5V37-2 | 4-1/2" | 4 | 1 HP 1" CHV41-A5-2 |
| 101030 | 3/4 HP 1-1/4" G5V43-2 | 4-1/2" | 4 | 1 HP 1" CHV41-A5-2 |
| 101040 | 1 HP 1-1/4" G5V47-2 | 4-1/2" | 4 | 1 HP 1" CHV41-A5-2 |
| 202020 | 3/4 HP 1-1/4" G5V37-2 | 4-1/2" | 4 | 1-1/2 HP 1" CHV42-A5-2 |
| 202030 | 1 HP 1-1/4" G5V44-2 | 4-1/2" | 4 | 1-1/2 HP 1" CHV42-A5-2 |
| 202040 | 1-1/2 HP 1-1/4" G5V50-2 | 4-1/2" | 4 | 1-1/2 HP 1" CHV42-A5-2 |
| 303020 | 3/4 HP 1-1/4" G5V37-2 | 4-1/2" | 4 | 3 HP 1" CHV46-A5-2 |
| 303030 | 1 HP 1-1/4" G5V44-2 | 4-1/2" | 4 | 3 HP 1" CHV46-A5-2 |
| 303040 | 1-1/2 HP 1-1/4" G5V47-2 | 4-1/2" | 4 | 3 HP 1" CHV46-A5-2 |
| 404020 | 1 HP 1-1/4" G5V41-2 | 4-1/2" | 4 | 3 HP 1" PM7B-47-2 |
| 404030 | 1-1/2 HP 1-1/4" G5V45-2 | 4-1/2" | 4 | 3 HP 1" PM7B-47-2 |
| 404040 | 3 HP 1-1/4" PM7 B52-2 | 4-1/2" | 0 | 3 HP 1" PM7B-47-2 |
| 606020 | 1-1/2 HP 1-1/4" G5V43-2 | 4-1/2" | 4 | 5 HP 1-1/2" PM7B-55-2 |
| 606030 | 2 HP 1-1/4" G5V46-2 | 4-1/2" | 4 | 5 HP 1-1/2" PM7B-55-2 |
| 606040 | 5 HP 1-1/4" PM7B53-2 | 4-1/2" | 0 | 5 HP 1-1/2" PM7B-55-2 |

# TYPICAL SPECIFICATIONS

## AWVR Combination Boiler Feed/Vacuum Pump

The contractor shall furnish and install as specified in the plans in accordance with the manufacturer's instructions_____(simplex, duplex, triplex or optional configuration) MEPCO type AWVR Boiler Feed/Vacuum Pump, catalog number _____ which has a rating of _____ GPM at _____ PSI and _____ CFM at 5-1/2" vacuum 160 degrees.

The boiler feed portion of the pump shall consist of a welded copper bearing steel tank with convex heads (_____ gallon capacity, _____ thick heads and _____ gauge shell,) a make-up water feed, pump isolation valves, water level gauge, thermometer, reverse acting float switch, low water cut-off switch, high water alarm contact switch, and close coupled centrifugal pump(s) mounted. The centrifugal pump(s) shall have a bronze fitted, enclosed impeller, a mechanical seal rated at 225 degrees F and shall be driven by a _____ HP motor operating at _____ RPM.

The vacuum portion of the pump shall consist of a welded copper bearing steel tank ( _____ gallon capacity, _____ thickness), a make-up water feed, water level gauge, high temperature limit switch and close coupled centrifugal pump(s) mounted. The centrifugal pump(s) shall have bronze fitted, enclosed impeller, a mechanical seal rated at 225 degrees and shall be driven by a _____ HP motor operating at 3450 RPM. The jet-type exhauster with integral diffuser shall produce a minimum of 20" of mercury vacuum with water at 125 degrees F when exhausting against a closed office in accordance with the Vacuum Heating Pump Code of the ASHRAE.

Boiler feed and vacuum portions shall be joined with a common frame and be furnished with pressure and vacuum gauges and all necessary accessories. In addition to the electric control mentioned above, pump will be furnished with vacuum switch and two (2) Nema 1 Control Panels (one for Boiler Feed controls, one for Vacuum controls) to include magnetic starters and hand-off-auto switches. The pump shall be powered by _____ Volts _____ Phase _____ Hertz.

**REPRESENTED BY:**

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