LOG SHEET NO. 4

Date..... Test No.....

Detailed Record of Gas Analysis

TIME	CO_2	$CO_2 + O_2$	O_2	$CO_2 + O_2 + CO$	CO	N	REMARKS

LOG SHEET NO. 5

Date..... Test No.....

Smoke Readings

No.	TIME	RINGELMANN CHART	No.	TIME	RINGELMANN CHART	REMARKS

CHAPTER IX

PUMPS FOR HEATING AND VENTILATING EQUIPMENT

INTRODUCTION

THE various kinds of pumps ordinarily used in connection with heating and ventilating installations may be classed under the following heads:

1. Boiler feed pumps.
2. Condensation return pumps.
3. Return line vacuum heating pumps.
4. Sump pumps.
5. Forced circulation hot-water heating pumps.
6. Circulating pumps for water brine, etc.
7. Refrigeration pumps and compressors.

In applying pumps to heating and ventilating systems the following points should be considered:

For Boiler Feed Pumps—the load factor, temperature of the intake water, static head on the pump intake, total pressure against which the pump must discharge, steam pressure available for steam driven pumps, provisions for emergency and breakdown service, method of control; as to whether pumps should be steam, electric or power driven, depending upon the relative first costs and economies taking into consideration the possibilities of the use of the exhaust from steam driven pumps and any difference in the cost of labor and attention required.

For Condensation Return and Vacuum Pumps—method and efficiency of return trapping, degree of tightness of the system, temperature of the condensate at the pump, probable cooling effect of the return piping, lifts (if any) required in the system, length of run of piping from farthest radiator to the pump, the total pressure against which the pump must discharge the total load to be carried, the load factor, the vacuum (if any) to be carried, as to whether the pump is to be automatically controlled from the water-line in a condensate receiver from the vacuum, or from both, the static heads on the suction and discharge, provisions for emergency and breakdown service and as to whether the pump is to be steam, electric or power driven, etc., as above.

For all other Pumps—the service to be performed, loads and load factors, emergency and breakdown service, methods of driving and methods of control.

Standards for Condensation to be Handled—The quantities of condensate

Material for this section prepared for THE GUIDE by Perry West, consulting engineer, Newark, N. J.