# HIPPO HIGH PRESSURE PROCESS TUBE FIRING BURNERS

DATA SHEET

* Efficiencies in excess of 80%
* Replacement of steam heating in existing tanks
* Heat inputs from 47kW to 4220kW (160,000 to 14,400,000 BTU/hr)
* Point-of-use application
* Suitable for most aqueous solutions
* Simple to install and maintain

## INTRODUCTION

The heating of aqueous solutions in vats, tanks and storage vessels is a process common to many industrial and commercial processes. It represents a considerable heating load, the bulk of which has been satisfied traditionally by steam heated immersion tubes, direct steam injection and large gas and oil fired burner systems of the forced or natural draught type. Fuel efficiencies by this means of heating are generally between 50 and 70%, and in the case of the older steam raising plant possibly as low as 45%. A new ACE HIPPO burner operates at efficiencies in excess of 80% by means of high intensity gas firing into small-bore immersion tubes.

The high efficiencies obtained not only significantly reduce operating costs but also enable environmental pollution to be reduced by as much as 50%.

ACE HIPPO High Intensity Burner Systems are specifically designed for the heating of aqueous solutions in vats, tanks and storage vessels or processes where large volumes of hot water are required. The unique design of burner enables extremely high heat releases to be obtained when firing into small-bore immersion tubes, a feature which is a critical importance where space is restricted.

Of compact design, the ACE HIPPO burner will operate at efficiencies in excess of 80% when installed with immersion tubes having a length to diameter ratio 140:1 at its nominal rating or 180:1 when operating at its maximum rating. The ACE HIPPO burners are available with inputs ranging from 47kW to 4220kW (160,000 to 14,400,000 BTU/hr) and in tube sized ranging from 1½in to 12in diameter (40 to 300mm). The nominal rating of the burner is based upon a gas pressure of 200mm wg (8in) being available; where higher gas and air pressures are available the burner can be fired at its maximum rating. See table for list of Burner Capabilities and Immersion Tube Sizes.

## BURNER SPECIFICATION

The ACE HIPPO burner incorporates a removable back plate, which has an integral burner head design to give the correct mixing of gas and air to ensure complete combustion within the combustion chamber. Products of combustion leave the chamber through a converging nozzle and flow at high velocity through the immersion tube, thereby producing high heat transfer rates by the scrubbing action of the gases with the inner tube surface. The combustion chamber, being of all metal construction, is immersed in the tank solution, which ensures maximum heat release and low external burner temperatures. Provision for spark ignition, flame detection and observation is provided for ease of removal or maintenance.

The burner system is supplied complete with air/gas control train incorporating all necessary valving to conform to British Gas and BSI approvals. A separate wall-mounted control panel is provided into which is mounted the control equipment and indicator lights etc. For ease of site installation the burner chamber, gas train, air fan and control panel are supplied as separate items for site assembly. Interconnecting electrical wiring is not included in our supply. Where necessary, external refractory lined or water cooled combustion chambers can be supplied.

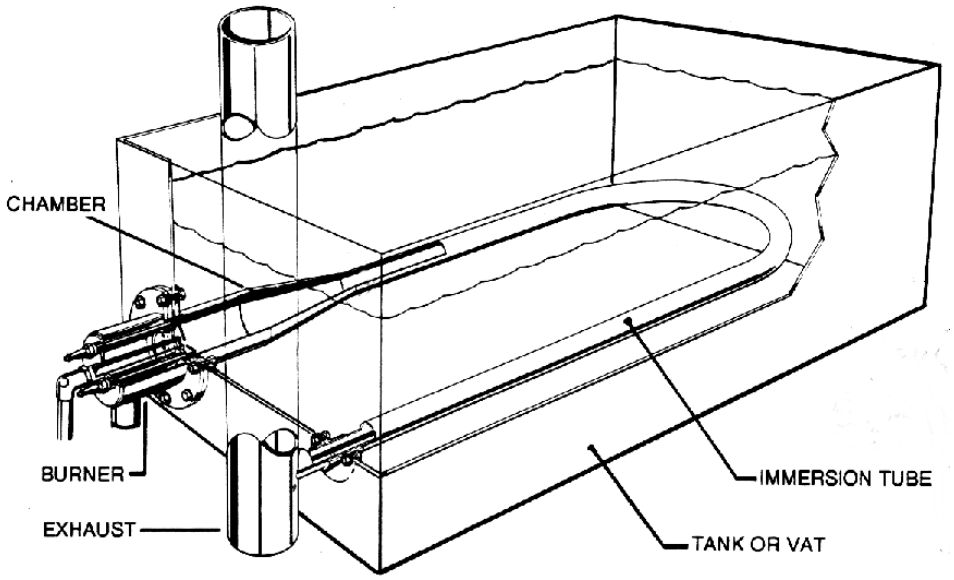
## IMMERSION TUBES

To obtain efficiencies in excess of 80%, it is essential that the tube length to diameter ratio be maintained at 140:1 when using the burner at its nominal rating, and 180:1 at its maximum rating. See table for other ratios and efficiencies.

Immersion tube and combustion chamber materials are dictated by the process requirements, and the nature of solution should be stated when ordering or requesting information. Standard supply is either mild steel or Type 316 Stainless Steel. Immersion tubes can be supplied by ACE designed to meet the customer's specific requirement and matched to the burner to give optimum performance.

# TYPICAL ACE HIPPO BURNER SYSTEM

TYPICAL BURNER SYSTEM




## HIPPO BURNER CAPACITIES

| Model No. | Immersion Tube | | Medium Pressure (MP) | | High Pressure (HP) | |
|---|---|---|---|---|---|---|
| | In. | mm | KW | BTU/HR | KW | BTU/HR |
| 1.5 | 1½ | 40 | 47 | 160,000 | 84 | 288,000 |
| 2 | 2 | 50 | 88 | 300,000 | 158 | 540,000 |
| 2.5 | 2½ | 65 | 123 | 420,000 | 221 | 756,000 |
| 3 | 3 | 80 | 176 | 600,000 | 316 | 1,080,000 |
| 4 | 4 | 100 | 293 | 1,000,000 | 527 | 1,800,000 |
| 5 | 5 | 125 | 440 | 1,500,000 | 791 | 2,700,000 |
| 6 | 6 | 150 | 586 | 2,000,000 | 1055 | 3,600,000 |

**NOTES**

1) Pressures required at burner head - GAS: 165mm. AIR: 190mm. Medium Pressure (MP).
2) Pressures required at burner head - GAS: 635mm. AIR: 660mm. High Pressure (HP).

FLUES

Flues should be taken at least 2 metres above floor level and insulated. In certain circumstances it maybe necessary to have a total flued installation.
See separate Data Sheet for information.

ANCILLARIES

Temperature controllers, time clocks, gas boosters etc., are available from ACE to supplement the ACE HIPPO System.

TECHNICAL INFORMATION

Technical Data Sheets are available on request to assist in burner and immersion tube selection, heating calculations, commissioning and installation.

IMMERSION TUBE EFFICIENCY v L/D RATIO

| Efficiency | MP | HP |
|---|---|---|
| % | L/D Ratio | L/D Ratio |
| 55 | 48:1 | 54:1 |
| 60 | 58:1 | 64:1 |
| 65 | 68:1 | 75:1 |
| 70 | 80:1 | 89:1 |
| 75 | 96:1 | 110:1 |
| 80 | 120:1 | 170:1 |
| 83 | 180:1 | - - - - |

**ADVANCED COMBUSTION ENGINEERING LIMITED**
Unit 3, Commerce Street, Carrs Industrial Estate, Haslingden, Lancashire. BB4 5JT
Telephone: 01706 212 218 Fax: 01706 228 735
e-mail: enq@aceburners.co.uk