



## Multiplex 50 kW-750 kW MPSR/MPR

### Recuperative Gas Burner System

- Increased efficiency and fuel economy
- Under cold start conditions, unit can fire at up to 50% extra to maximum hot air rating for rapid heat-up
- Wide stability limits and excess air and gas capability
- Easy installation
- Rugged construction
- Up to 30:1 turndown
- Excess air/gas ratio options

#### OPERATION

The Nu-way Multiplex recuperative burner system offers the option of a self-recuperative burner or a separate recuperator and burner.

The recuperative system is designed to extract waste heat from the flue products of medium to high temperature industrial processes and to pre-heat the cold combustion air, returning heat to the process and so considerably reducing the fuel usage.

The system is designed for the modernisation of existing furnaces or for use in new, energy-efficient furnace designs. Applications include forge furnaces, reheating furnaces, intermittent kilns, soaking pits, heat treatment furnaces, crucible furnaces and indirect heating processes.

#### Self Recuperative Burner

- Eliminates insulated duct work
- Heat exchange takes place at the burner, not remotely, less heat loss

#### Separate Recuperator

- Can retain existing air flow patterns in furnace
- Can use more than one burner per recuperator
- Can be used with specialised oil and gas burners.

## **RECUPERATIVE SYSTEM**

The Recuperative System may be used with flue gas entry temperatures up to 1400°C (for higher temperatures please contact Nu-way). Combustion air makes three passes through the recuperator to give a high level of heat recovery from the hot exhaust gases. Depending on the flue gas temperatures and burner rating, fuel savings of up to 50% may be achieved.

The recuperator design ensures that the combustion air is preheated only by the flue gases and not by the burner or furnace. Low pressure drops through the system ensure low power requirement for the combustion air/eductor air fan.

All internal parts of the unit are manufactured from high grade heat resisting materials and the design ensures that these components are not subject to thermal stress. The construction allows for easy dis-assembly to facilitate inspection, cleaning and replacement of internal sections, should the need arise.

## **SELF RECUPERATIVE BURNER OR SEPARATE RECUPERATOR**

It is a unique feature of the Multiplex recuperative system that the same basic components are used to produce both the MPSR self recuperative burner and the MPR recuperator.

## **MOUNTING**

The complete unit is mounted in the furnace wall. Installation involves little more than that of fitting a conventional burner.

## **CAPACITIES**

This data sheet covers a range of four sizes of recuperator with nominal maximum capacities of 180kW to 750kW.

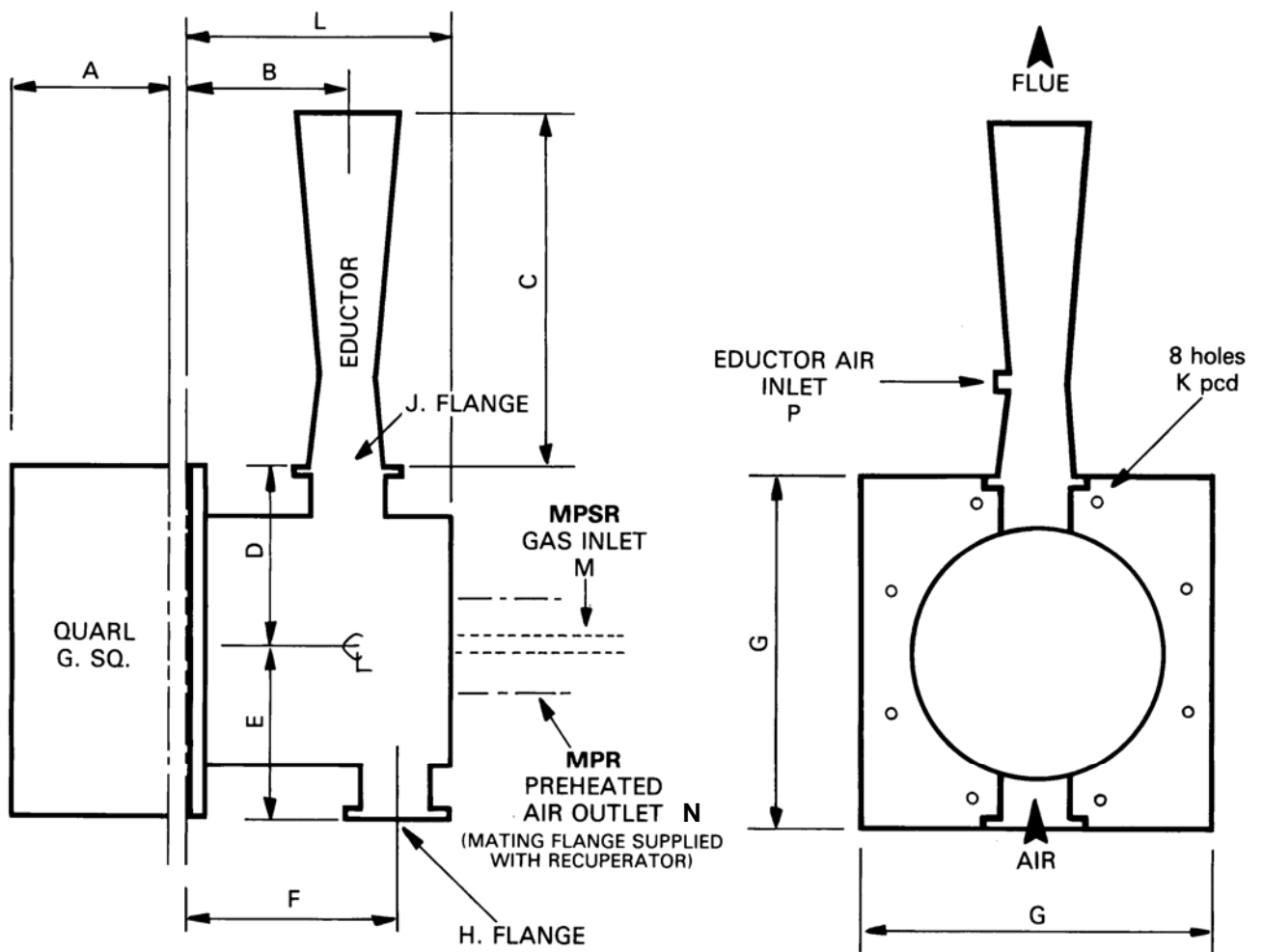
On cold start-up this input can be increased by 50% if required, (subject to available gas and air pressures). This ensures there will be no increase in warm-up time from cold on forge furnaces and the like, the burner in the cold condition being able to fire at the same rate as a conventional cold air burner.

## **IGNITION AND FLAME FAILURE**

The burner is ignited by direct spark, using the well-proven Multiplex arrangement, and where required, flame monitoring is provided using an ultra violet scanner.

## MPSR & MPR LEADING DIMENSIONS

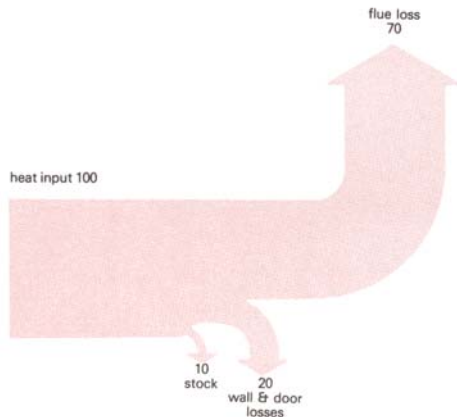
PRINCIPLE DIMENSIONS (mm)								FLANGES : BSP TABLE D							
MPSR & MPR Size	Rating (Hot) kW	A	B	C	D	E	F	G	H BSP ins	J BSP ins	K	L	M BSP ins	N N.B. ins	P BSP ins
6	180	335	135	984	225	225	240	450	2.5	4.0	430	310	1.0	4.0	1.5
10	300	335	200	996	255	255	330	510	3.0	5.0	490	415	1.5	5.0	2.0
15	450	335	320	1170	300	300	480	600	4.0	6.0	580	570	2.0	6.0	2.0
25	750	335	470	1452	350	350	675	700	5.0	8.0	685	780	2.0	8.0	2.5



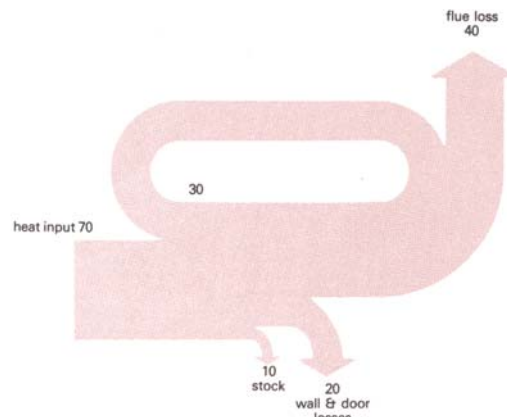
All dimensions are given for guidance and should be confirmed with Nu-way before proceeding with detailed drawings.

## PERFORMANCE

The effect of introducing pre-heated combustion air to the burner can be seen from the diagram below. To arrive at an indication of fuel savings it is necessary to know the flue gas temperature leaving the furnace.



SANKEY DIAGRAM OF A NON-RECUPERATIVE BATCH RE-HEATING FURNACE



SANKEY DIAGRAM OF A RECUPERATIVE BATCH RE-HEATING FURNACE

**POTENTIAL FUEL COST SAVINGS** based on performance of Nu-way Multiplex Self Recuperative Burner.

Fuel gas recuperation can typically provide 30% - 50% fuel savings by pre-heating the inlet combustion air.

However, greater savings are often provided with higher operating temperature and the associated refurbishment of the furnace, and may provide total fuel savings in excess of 50%.

### Example:

An MPSR 15 (450 kW) operating at 1300°C flue gas temperature should provide fuel savings of 40%.

Assuming      60 hrs week  
                    47 weeks per year  
                    1.35 p per kWh fuel cost

$$\begin{aligned} \text{Annual fuel cost savings} &= 450 \text{ kW} \times 0.4 \times 60 \text{ hr/wk} \times 47 \text{ wk/yr} \times 0.0135 \text{ £/kWh} \\ &= \text{£ } 6853 \text{ per annum} \end{aligned}$$

The above gives an indication of fuel savings. Actual savings may be influenced by a number of factors, usually savings are further improved because of the correct maintenance of gas/air ratio and correct furnace pressure control.

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