



Application

This single head flare unit is designed for the direct venting of natural gas and LPG. The burner can operate at pressure up to 2bar and if necessary higher pressure supplies can be regulated to this pressure. The flare burner unit enables the unit to burn off any vented gas, where the vented gas could cause a problem, due to smell etc. The single flare unit has one burner and one ignition unit, a twin burner unit is also available with two burners and two ignition units.

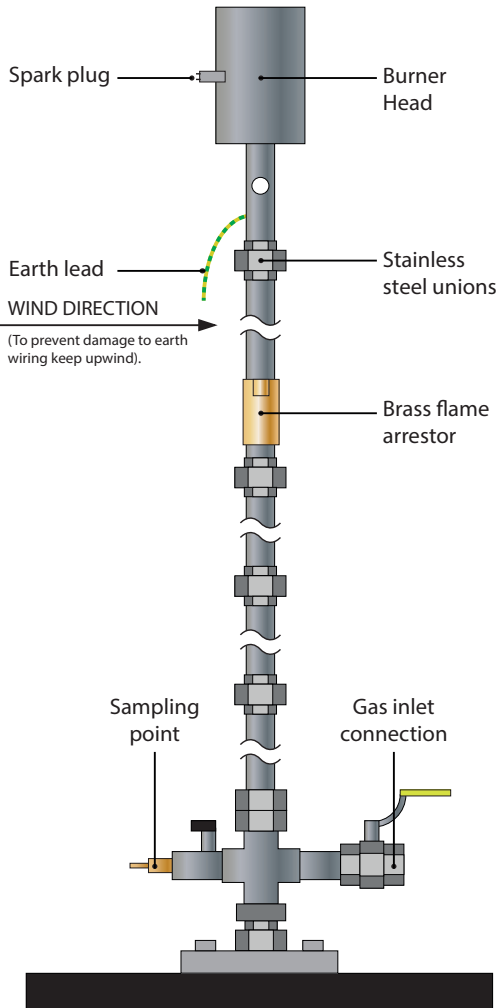
The unit contains a continuously rated high voltage and switched transformer (fed from 110V source via a safety transformer) that provides a continuous spark for ignition of the flame. This is particularly important so that a flame can be maintained as the gas concentrations fall. When the purge is nearing completion the flame will not be maintained and normal gas venting will continue through the stack.

The main flare unit is mounted in a vinyl coated wooden and aluminium framed purge box that provides a stable base on firm ground conditions. The flare stack assembly consists of four vertical 15mm steel pipes, one with an in-line flame arrestor, they are connected with stainless steel unions together with a valved section and are all connected above the flange mount in the roof of the box.

Hazards

-  **When flaring, it is vital to ensure that the flame cannot ignite any adjacent materials and that the area does not contain any potentially flammable products that could ignite or explode.**
-  **It is recommended that fire extinguishers are accessible and the area is cordoned off to keep people more than 5 metres away from the flare unit, especially when flaring.**
-  **Be especially careful in wet/damp weather with high voltage power supplies.**
-  **In windy conditions make absolutely certain that the unit is stable. Also make sure that the spark plug cable is upwind so any heat from the blowing downwards does not damage the wiring.**
-  **Pipework must not be left with open ends.**
-  **When flaring it may be advisable to notify interested parties e.g. Fire Brigade, your gas supplier/transporter, your safety department, etc of your operations.**
-  **A Risk Assessment and procedure (Method Statement) must always be completed before commencement of operations.**

Assembly



The Flare Unit door must be fully opened when flaring, to give the box stability. The length of purge hose [1/2" BSP for LPG/high pressure NG and 1" BSP for low pressure NG] should be carefully removed from the purge box and connected to the union at the inlet valve on top of the box and to the pipework or vessel to be vented. Additional lengths of hose are available. The 1" NG hose must not be used above 100 mbar. The 1/2" HP hose must not be exposed to pressures above 4 bar nor to liquid LPG.

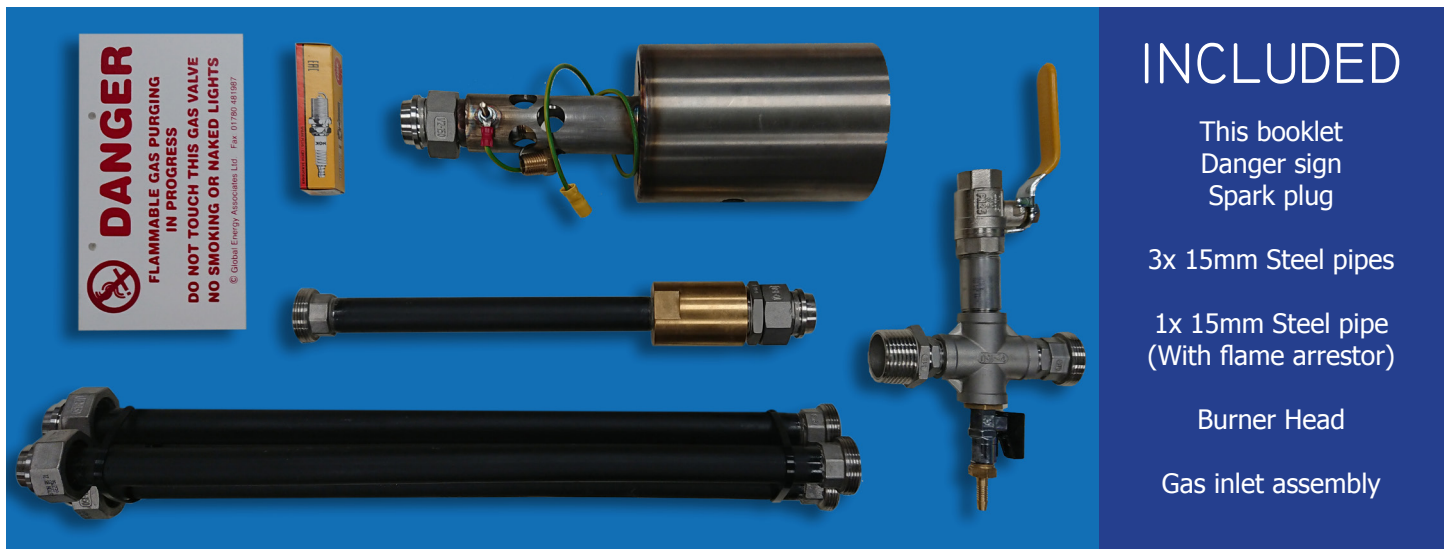
For high pressure supplies, an adjustable regulator with pressure gauge similar to that shown below must be attached to the inlet end of the supply hose to limit the pressure to the burner to less than 2bar.

Remove the flare burner from inside the main box. Where low pressure natural gas is being used the smaller 6mm orifice (supplied if required) should be fitted in place of the 10mm HP/LPG orifice. Connect the burner to the short 1/2" steel upright with the flame arrestor.

Install the valve unit with PTFE tape to the top flange. Connect the three 18" long 1/2" BSP steel uprights (with two unions) to the flame arrestor assembly. Do not over tighten the joints.

Connect the ignition lead to the spark plug and the earth lead to the burner. Visually check that the wiring is in good condition and the ignition lead is properly connected into the transformer. Then connect the pipe assembly onto the valved flange unit. Now connect the power lead to the 110V supply and if necessary, check the spark is working correctly.

Note: Make doubly sure that the main flare unit is stable, especially in windy conditions. Also ensure the spark plug and cable is upwind, so that any heat from the flame blowing downwards does not damage the wiring. The flare unit and the flame must be continuously attended during the flaring operation.



INCLUDED

This booklet
Danger sign
Spark plug

3x 15mm Steel pipes

1x 15mm Steel pipe
(With flame arrestor)

Burner Head

Gas inlet assembly

BSP Stack assembly components and diagram



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SFU - Single Head Flare Unit

GEA Products by Duomo (UK) Limited - Worcestershire, England

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Operation

Ensure the flare burner is in a safe location for flaring and that the supply pressure is controlled for safe operation of the flare assembly. If supplied, the 1/4" bsp HP regulators (see information below) must not be exposed to pressures above 16 bar. Where practicable, reduce the pressure in stored vessels and pipework through a gas appliance burner at shut down.

Ensure the 110V supply is safely provided and that the ignition and earth leads are connected to the spark plug and burner body. Energise the spark electrical supply from the isolator switch inside the purge box before slowly turning on the 1/2" ball valve supplying gas to the burner head; ensure the flame lights up. The flame size can be controlled from this ball valve.

The flame should immediately light when the gas is allowed to slowly enter the burner. If it does not light, turn off the gas at the flare unit and check that the spark plug is sparking correctly and that the earth connection within the box is secure. The spark gap should be not less than 1mm. The flame will also easily light with a small portable propane torch.

As the gas concentration from the pipework or the pressure vessel reduces, the flame will die away. The flare gas rate should be set to obtain a good stable flame which does not produce excessive downward radiation of heat.

After the flame has died away, the purge procedure for pipework may be completed as described in IGEMUP/1. This flare unit has enough flow capacity to purge pipes up to 2" according to UP/1. For systems above 2" at low pressures, the GEA SPU, MPU, LPU and APU purge units can be used. For pressure vessels and very large volume pipework, nitrogen purging is recommended.

Finally, allow the burner head to cool, disassemble the 1/2" BSP stacks and burner assemblies, replace the 1/2" bsp pipes, the burner and flame arrestor unit into the box and close the door making sure that the wiring is not trapped and damaged.

General

When opening pipework and vessels it is essential to purge to air and to an end state of less than 40% LFL or more than 20.5% oxygen. An optional airflow mover (purge fan unit) is available for gas to air purges. For 'hot work' a lower end point of say 5% LEL may be more appropriate. Pipework must not be left with open ends.

And lastly, expose the disconnected Purge Hose to the open air for several minutes or blow through with air to vent out the gas and then carefully wind the Purge Hose into the box. If it is extremely cold, the hoses may be too stiff to safely get back inside without damage to the box or meter.



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