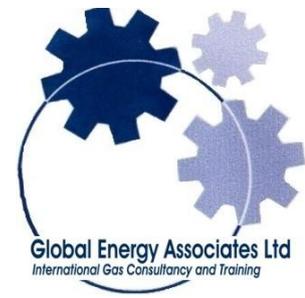


Operating Instructions

LPU Purge Unit



This purge unit is designed for the direct purging of pipework from 100 mm to 250/300 mm bore from air to natural gas with pressures up to 500mbar. It can also be used for natural gas to air purging but an air mover must be used. Smaller Purge Units for up to 100 and 150 mm bore pipework are also available, contact GEA for information.

All Soundness Testing and Purging must be carried out as set down in Institution of Gas Engineers and Managers publication UP/1.

The unit is mounted in a Vinyl covered box that should be stable under reasonable conditions on a firm base. Where fitted with castors these are for use on hard surfaces and damage will occur if dragged over mud and soft surfaces. The box should be stored in the dry. When handling the unit do not forget that turbine meters are **delicate** instruments!

A valved test point is included for the connection of a Gas Analyser such as a Gascoseeker and a pressure point is included for monitoring the gas pressures or for testing the hose assembly for tightness. The flow meter measures the gas velocity as a flow as given in UP/1;

Press the panel on the meter index to change from flow to flow rate readings.

No Smoking signs are attached to the box and it may be wise to use a red/white Barrier Tape to keep people more than 5 metres from the Purge Unit, which must be located in a safe place. Always keep a fire extinguisher handy. Large purging operations should be accompanied by a Risk Assessment to ensure that all safety issues have been considered.

Assembly:

Place the unit on firm level ground and open the door to give the box stability. Remove the two vent stacks and attach to the top of the box. The assembled stack is now over 2.5m above ground level. As this purge system guarantees meeting the velocity requirements of UP/1 there is no need for a flame trap. If the velocity falls below that in UP/1; **STOP** the purge and investigate and/or fit a flame trap.

An integral open ended top hat filter is installed to the low hand side of the box to protect the meter from internal damage. Ensure this end is always kept clean and free from debris. There is a single 10m length of hose supplied separately to the box with ABS 2" bsp quick release connections one of which connects to the filter inlet within the lower left hand side of the box. There are also quick release connections for connecting to the installation pipework.

Do not over-tighten the gas connections as they achieve gas tightness quite easily if not damaged.

Additional lengths of larger bore hose are available.
Spares for the Quick Release fittings can be obtained from orders@kiowa.co.uk.
Spares for the Turbine Meter can be obtained from mwatechnology@btclick.com.

Operation:

The direct gas to air or air to gas purge operation is detailed in IGE UP/1.

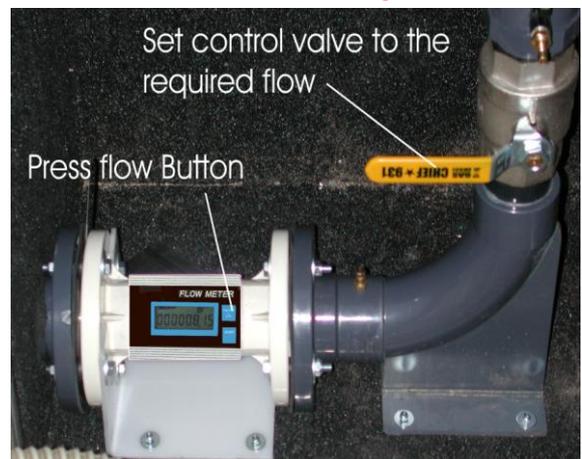
Verify that the pipe tapping and size to the purge connection is large enough to provide the purge flow rate without excess pressure drops. Any valve supplying the unit should be of the full-bore type e.g. ball valve.

If the primary meter and pipework sizes are correct and the purge rate cannot be obtained, the tapping or pipe to the purge point is too small. If possible move the purge connection to a larger section of pipe and purge to that point before finishing the purge on the original smaller pipe. **If this is not practicable, a purge with nitrogen according to UP/1 must be carried out.** Contact GEA Ltd for their nitrogen purge kit.

For pipe sizes at 100mm [4"] bore and above the flow rate can be easily set by the 2" full bore manual valve inside the Purge Unit.

Press the panel on the meter index to change from flow to flow rate readings.

Pipe Size	Set control valve to give flow rate m ³ /h
100 mm (4")	20
125 mm (5")	30
150 mm (6")	38
200 mm (8")	79
250 mm (10")	141
300 mm (12")	216



If the desired flow rate is **not** immediately achieved, **ABORT** the purge and turn off the valves.

Always make sure that the primary meter is capable of passing these flow rates. If not, use the meter bypass. The Shipper must be notified if the bypass seal is broken.

During the purge to gas, the flow rate may change. This is normal and is caused by the change in specific gravity as the flow of air is replaced by the lighter gas. This flow is above that necessary but speeds the purge operation. Conversely when purging from gas to air, the flow will change and must be adjusted upwards to maintain the ideal minimum velocity.

It should not be necessary with this design of unit to monitor the gas pressure during purging since the indication of gas flow on the meter shows that pressure exists. Please note that if an electronic gauge is used it must be intrinsically safe for use in flammable environments. Do not forget to have any test instrumentation checked and calibrated at least annually.

Never attempt to light the purge gases on the top of the vent stack!

On completion of a successful purge to gas you should have achieved approximately 90% methane. Higher levels may not be possible due to the constituents of the gas itself.

When removing redundant pipework and gas meters it is essential to purge to air and to get less than 40% LFL or more than 20.5% oxygen. An optional 40 m³/h air mover is available for gas to air purges from GEA Ltd.

**All removed components must be capped or sealed correctly.
Open ended pipework must not be left.**

Finally, replace the parts in the in the box. Refit the two plugs to the open ends at the top and bottom of the box. Expose the disconnected Purge Hoses to the open air for about ten minutes to vent out the gas