

# An EFFECTS Breakthrough

The latest innovation  
in special effects -  
fully controllable  
spectacular jets of CO<sub>2</sub> ...  
let your imagination  
run wild





In answer to the constant search for new visual effects, The Effects Company have introduced the CO<sub>2</sub>Jet system - a spectacular visual display where powerful white jets of CO<sub>2</sub> can be programmed to project from a moving head unit - just like a moving light - with stunning results!

There is no cumulative build up, as with smoke machines, since the effect disappears almost immediately.

Like any innovative new effect, the scope for using the CO<sub>2</sub>Jet System is only limited by the skill and imagination of the user - and clever applications of ideas/programming will produce some truly amazing effects/patterns, pulsating, swirling, chasing - the permutations are never ending! Up to 7 metre high jets of CO<sub>2</sub>, which can be programmed to move 355 ° in azimuth and 230 ° in elevation, all achieved with high quality stepper motors and gear and drive systems for smooth operation.

Imagine the areas where the CO<sub>2</sub>Jet can be utilised: rock and roll, theatre, product/car launches, night clubs, fashion shows, theme parks, casinos, reviews and many many more.

You're thinking already...?



## Method of operation

Each head is connected to its own 'liquid withdrawal' CO<sub>2</sub> cylinder and a local mains supply, then cable is taken back to the 'DATALINK MODULE', which runs up to 4 heads, (see illustration). The data lines are linked in 'daisy chain', similar to a moving light and each head requires 5 channels of DMX assignment on the DMX lighting desk - therefore a 4 head system requires 20 channels. An 8 head system would require 40 channels plus 2 DATALINK MODULES, and so on.



## Control

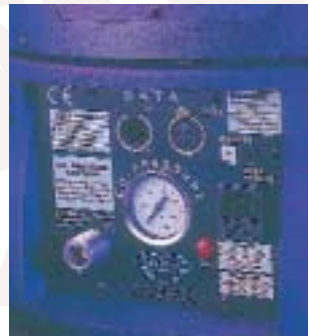
A standard DMX 512 control desk is used for control and programming. This is fed into/thru the 'DATALINK MODULE' - an interface unit which sends and receives data between the heads.



## Engineering

In common with all Effects Company products, the CO<sub>2</sub>Jet System has gone through an extensive development programme, with exhaustive 'in the field' testing prior to production. With this high standard of engineering and careful attention to manufacturing techniques, the CO<sub>2</sub>Jet will give long periods of trouble-free operation. All electronic circuits and microprocessor programmes have been developed, and are fully owned, by ourselves.

All Effects Company products, including the CO<sub>2</sub>Jet are fully compliant with the latest European 'CE' regulations - including EMC and Low Voltage directives. The CO<sub>2</sub>Jet System is available in both UK and USA specifications with regard to power requirements. The CO<sub>2</sub>Jet head, manifold, and high pressure hose connectors are available with either UK or USA CO<sub>2</sub> thread specifications.



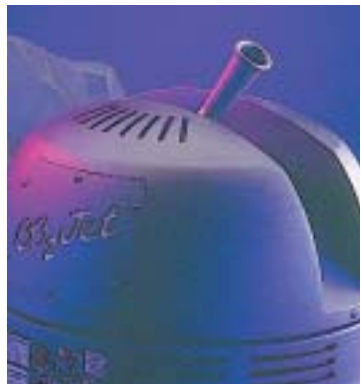
## The CO<sub>2</sub>JET Head

Consisting of a rotating top housing on a fixed base and manufactured from spun and laser profiled steel, the CO<sub>2</sub>Jet head is an attractive feature in itself when installed in a venue or used as part of a stage show, and is designed to be used in all positions; on the floor, mounted sideways or hung upside down via the 4 x 8 mm dia. holes in the flanged base. The main panel contains connections for:

1. CO<sub>2</sub> supply
2. Mains power (IEC connection) - fused
3. Data In/Thru connection (XLR's)
4. BCD address switch (Heads 1-4)

Each head uses 5 channels of DMX/Data:

- Channel 1 = Azimuth (pan)
- Channel 2 = Elevation (tilt)
- Channel 3 = CO<sub>2</sub> release
- Channel 4 = Azimuth speed
- Channel 5 = Elevation speed



## CO<sub>2</sub> Usage

Using the maximum size (largest diameter) flow restrictor, a 34 Kg liquid CO<sub>2</sub> cylinder will last for approximately 3 ½ minutes. Each CO<sub>2</sub>Jet head requires its own CO<sub>2</sub> cylinder (or manifolded cylinders).

## Datalink Module

This acts as an interface between the DMX lighting desk and the heads - and allows the many function indications to be displayed in an easy to read format. With a panel size of 410 mm x 200 mm the Datalink Module can be flight cased and used in 'touring' mode, by itself, or panel mounted in a permanent installation via the slots in the front panel. Up to 4 CO<sub>2</sub>Jet heads may be connected to a Datalink Module, which will then display the following information for each individual head, on the front panel:

- Mains Power on
- CO<sub>2</sub> solenoid operating
- CO<sub>2</sub> pressure/connected
- Head homing/calibrating

There is also a facility to activate the CO<sub>2</sub> releases independently or all together, without the necessity of having a DMX signal connected.

On the rear of the Datalink are:

- Male/Female XLR Connectors for DMX IN/THRU
- Mains Power IEC input
- 3 x BCD switches for DMX Channel address
- 1 x BCD switch for CO<sub>2</sub> Sensor address
- 2 x XLR outputs (2 areas) - for data connection to CO<sub>2</sub>Jet heads and CO<sub>2</sub> Sensors (if used).



A flexible low voltage light is also supplied.

An acrylic panel set into the front fascia displays status indications related to CO<sub>2</sub> Sensors and a 'climbing bar graph' indicates the levels being transmitted from any CO<sub>2</sub> Sensor(s) (if connected).

'Mains on' and 'DMX receive' indications are also present on this panel.

## CO<sub>2</sub> Sensor

This unit accurately measures CO<sub>2</sub> concentrations in air, where persons are present, and transmits this information - down data cables back to the Datalink Module - which displays the information in the form of a 'rising bar-graph' of CO<sub>2</sub> concentration levels. When the safe environmental limits are exceeded, the system will automatically disable the until the levels are reduced. Up to three CO<sub>2</sub> Sensors may be used, and they are sited anywhere in the 'Data out' circuit, with a BCD address switch to identify which unit /area is sensing, (see illustration).



Considerable research has produced a sensor system which uses military grade infra red absorption techniques and sophisticated circuitry for ultra-reliability and accuracy. The sensor may be used free

standing, or attached permanently via 2 screw holes, and the CO<sub>2</sub> Sensor and Datalink may be used as a 'stand alone' CO<sub>2</sub> measurement/display unit, without using the CO<sub>2</sub>Jet heads.



## Flow Restrictor Nozzles

These restrict the out put/ flowrate and the height of the jet - useful when a less powerful effect is required ie: for club installations, or where height is restricted. Each CO<sub>2</sub> Jet head comes with the 5 mm dia. restrictor as standard.



## Discharge Horns

Three types are available, to produce different effects:

### • SHORT CUTAWAY HORN:

Produces a thin grey jet with a shortish height and sharply defined edges. The jet is quite powerful and is therefore less likely to 'sway' if rapid head movements are programmed in.

• SHORT HORN: Produces a jet that is slightly whiter than the above and with softer edges. The jet is higher and less fierce although still quite powerful, and comes as standard with each factory boxed CO<sub>2</sub> Jet head.

• LONG HORN: Produces a very white effect that is very 'cloudy', with soft edges. It is the least 'fierce' jet, has the least sound emission and a good height. It is also useful for 'whitening' the jet if CO<sub>2</sub> cylinders are warm and are therefore producing a weak effect.



## Hose Joint

A Stainless steel in-line connector for joining /extending high pressure CO<sub>2</sub> hoses. Designed for touring and non-permanent installations.



## Manifold Block

Where a large amount of CO<sub>2</sub> is used, the cylinders can be linked together - to reduce the frequency of having to change the supply. The manifold has inlet connections for up to 4 cylinders, with 1 output. A baseplate is provided for mounting onto a surface if required.



## Blanking Nuts

If some of the manifold connections are being unused, they may be blocked off with blanking nuts. These are purchased separately from the manifold, and come with their own washer /seal.



# CO<sub>2</sub> Jet



Photo courtesy of Lite Alternative

# Technical Specifications

## CO<sub>2</sub> JET HEAD:

Height (without horn) : 350mm  
Diameter: 450 mm (incl. mounting flange)  
DMX Channels required : 5  
Azimuth: 355 ° in 2.3 secs (max speed).  
Elevation: 230 ° in 2.1 secs (max speed).  
Power requirements: 220-240v/50Hz 1 AMP  
110-120V/60Hz 2 AMPS  
CO<sub>2</sub> Source: 50 bar standard 'bar cylinder' type  
- LIQUID WITHDRAWAL VESSEL  
Finish: Royal Blue Texture  
Packed Size: 550x550x495 mm.  
Weight (boxed): 25.5 Kg

## DATALINK MODULE:

Length=410 Width=200 Height=100mm  
Power requirements: 220-240v/50Hz 1 AMP  
110-120v/60Hz 2 AMPS  
Panel cut-out size: 375x185 mm.  
XLR Output Ports (to heads etc): 2  
Finish: Royal Blue texture/eggshell  
Packed Size: 490x295x170mm  
Weight (boxed): 4 Kg.

## MANIFOLD:

Number of connections/ports:5  
Thread types: UK or USA specification  
Finish: Black anodised aluminium body  
Stainless steel thread inserts  
Royal Blue texture baseplate  
Size: 275 x 80 x 75 mm (incl. baseplate)  
Boxed size: 380 x 150 x 150 mm  
Weight (boxed): 2.5 Kg.

## BLANKING NUTS:

Material: Stainless Steel  
Thread types: UK or USA spec.  
Spanner size: 28 mm A/F.  
Complete with washer/seal

## RESTRICTOR NOZZLES:

Material: Stainless Steel  
Length: 42 mm  
Spanner Size: 17 mm A/F

## DISCHARGE HORNS:

	SHORT CUTAWAY	SHORT	LONG
Length	93 mm	93 mm	200 mm
Max. diameter	35 mm	35 mm	59 mm
Material	Spun steel/stainless	Spun steel/stainless	Spun steel/stainless
Finish	Royal Blue texture	Royal Blue texture	Royal Blue texture
Weight	50 gr.	70 gr.	170 gr.

## HIGH PRESSURE HOSE CONNECTOR:

Material: Stainless Steel  
Thread types: UK or USA specification  
Spanner size: 25.4 mm A/F

## CO<sub>2</sub> SENSOR:

Length = 257mm Width=135mm Height=62 mm  
Power requirements: 220-240v/50Hz 12 WATTS  
110-120v/50Hz 12 WATTS  
Finish: Royal Blue Texture  
Boxed size: 330 x 175 x 100 mm  
Weight (boxed): 2 Kg

Working with

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