

# Coal Mine Dust Sampling System

## Escort® ELF Pump

The Escort ELF pump is designed for use in coal mine dust sampling as specified in 30 CFR Part 74. The state of the art electronic laminar flow sensor provides a constant flow control with  $\pm 2.5\%$  regulation of flow rate (from 1-3 lpm) with automatic compensation for changes in battery voltage, temperature, altitude, and sample load. An internal secondary standard calibrates the pump continuously and needs to be checked against a primary standard only once per month (or every 200 hours for coal mine dust sampling).

Escort Elf Sampling Pumps are NIOSH certified for coal mine dust sampling (TC-74-030) and MSHA certified as intrinsically safe for underground use (Approval # 2G-3924-1). UL approved as intrinsically safe for use in hazardous locations, Class I, Groups A, B, C, D; Class II, Groups E, F and G; Class III, Division I locations.

- ▶ Patented Electronic laminar flow control.
- ▶ Internal secondary standard calibrates the pump continuously.
- ▶ Inlet filter traps moisture and particulate matter
- ▶ Stainless steel filled plastic case provides EMI/RFI protection
- ▶ Rated IP66 for resistance to water and dust ingress.
- ▶ Flow fault indicator shows any sample inlet blockage
- ▶ Check against primary standard once per month or every 200 hours for coal mine dust sampling.



## 10mm Nylon Cyclone

Zefon's 10mm Nylon Cyclone (model 456243) is designed specifically for use with preweighed filter cassette assemblies when sampling for coal mine dust. The cyclone is used to separate respirable dust particles from non-respirable particles and is specified for use in coal mine dust sampling per 30 CFR, part 74.



## Filter Cassette Assembly

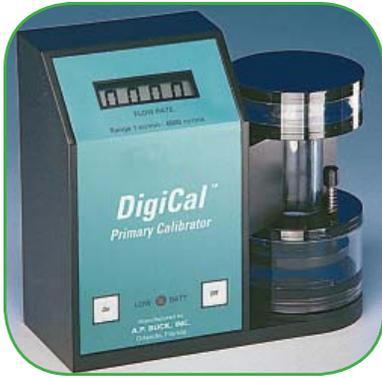
Zefon's Preweighed Coal Dust Sampling Cassettes consist of a sealed outer plastic capsule and an inner pre-weighed filter capsule. The inner capsule contains a 5 micron PVC filter, and stainless steel supports. Each filter cassette is supplied with a mine data card, which has the weight of the filter capsule recorded to the nearest 0.1 mg, and a mailing carton addressed to MSHA (Mine Safety and Health Administration). Specified for use in coal mine dust sampling per 30 CFR part 74.



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Sampling Equipment Specialists

# Escort® Pump Accessories



## CALIBRATION DEVICES

Sampling pump calibration is critical to the quality of samples taken. Calibration determines that the flow rate of air through the pump is accurate, within specified limits, usually  $\pm 5\%$ . A primary calibration device, the DigiCal™ Calibrator provides instantaneous calibration for instruments like the secondary flow standard inside the Escort ELF Sampling Pumps.

Just press the plunger and the DigiCal Calibrator does the work. Its unique flow cell replaces conventional bubble tubes and makes calibration easier. The DigiCal Calibrator achieves extreme accuracy by utilizing a computerized flow meter that provides instantaneous flow readouts on a digital display.

Accurate measurements are possible within  $\pm 0.5\%$  at any altitude.

## Escort ELF Specifications

### Operating Flow Control

Volumetric flow rate held within  $\pm 2.5\%$  of set-point over the 1-to-3 lpm operating range ( $\pm 5\%$  to 0.5 lpm), with automatic compensation for battery voltage, altitude, temperature and sample load changes.

### Flow Rate

Flow rate adjustable between 0.5 and 3 lpm

### Flow Indication

Liquid Crystal Display provides 0.01 lpm resolution.

### Operating Range

30 inches of water load up to 2 lpm and 10 inches up to 3 lpm.

### Flow Blockage Detection

Flow-Fault LED comes on immediately when block is detected. Pump shuts down within 90 seconds if block is not cleared.

### Elapsed Time Readout

To 999 minutes in increments of 1 minute. Holds the last reading after either flow blockage or low battery shutdown and when pump is off or in hold mode.

### Operating Time

Varies with flow rate and sampling device loading.

### Operating Temperature Limits

32°-113°F (0°-45°C)

### Physical Weight

23 oz. (652 gm), with battery pack.

### Dimensions

2.25" D x 4.25" H x 4" W (5.7 cm x 10.8 cm x 10.2 cm), with battery pack.

### Power Supply

4.8-volt battery pack of four nickel metal hydride cells.

### Battery Pack Capacity

2.8 amp hours

### Battery Pack Recharge Time

14-16 hours (overnight).

### Typical Battery Pack Life

300 or more charging cycles

## Pumps

Part Number	Description	Price
805560	Escort ELF Pump with 120v charger and sampling line.	\$1083.00
805563	Escort ELF 5 Pack Pump Kit with 5 station 120/240v charger and sampling lines	5602.00

## Pump Calibrators

Part Number	Description	Price
655101	DigiCal Calibrator	\$1300.00

## Cyclone

Part Number	Description	Price
456243	Respirable Dust Sampling Cyclone Assembly for Coal Dust Cassettes	\$ 270.00

## Filter Cassette Assembly

Part Number	Description	Price
803462	Coal Dust Sampling Cassette for Mine Operators, pre-weighed with 5.0 um PVC filter and Mine Data Card.	\$27.50

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