

Casella Tuff Personal Air Sampling Pumps

Introduction

The all new **Tuff** range from Casella CEL is exactly that. A range of 48 pumps with a variety of features to match almost all requirements for a personal air sampling pump. Simple and intuitive 4 button controls allow the user to quickly get to grips with the operation of this pump family and get the best out of it while performing the necessary tasks. Two easily replaceable and rechargeable battery packs are quickly charged in about 3 hours on the single or 3 way drop in charger base. Three models provide Standard, Plus and Pro versions of usability with either 3 or 4.5 l/m maximum flow rates.



Tuff 3 & 4 air sampling pump and intelligent single charger base

Key benefits

- ❑ Wide variety of models to suit virtually all applications
- ❑ **Standard** model for simple air sampling
- ❑ **Plus** model for fixed duration sampling
- ❑ **Pro** model for advanced programming features
- ❑ Tough, rugged and reliable
- ❑ 2 overall flow rates from 500 to 3000 or to 4500 ml/min
- ❑ Long life NiMH battery packs
- ❑ Fast charge in about 3 hours
- ❑ Single or three way chargers
- ❑ Simple intuitive controls
- ❑ Informative LCD display
- ❑ Use with optional low flow adaptor for flow rates down to 5 ml/m for use with tubes

Applications

The **Tuff Standard** model is well suited to simple and basic abatement monitoring with straight forward set flow rate using an external calibrator and start/stop mode of operation. The **Tuff Plus** models add to this by including an on-board flow rate selection, sampled volume and a fixed duration run time. The **Tuff Plus** range of sampling pumps is ideally suited to industrial hygiene sampling and abatement work. For the ultimate in flexibility and control then the **Tuff Pro** model will be the best choice.

In addition to all the capabilities of the **Tuff Standard** and **Plus** models the **Tuff Pro** version includes an intelligent charge indicator for the battery pack showing remaining run time at the selected flow rate. It also has 2 separate automatic timed start-stop routines programmed from the associated Pump Manager pc software program. This allows delayed monitoring to be setup, uploaded and then the pumps handed over to someone else to carry out the actually monitoring on site nearer the required time.

Also available in the **Tuff Pro** version is the TWA mode when the pump is able to start and pause itself over an extended total run time and still collect the correct volume spread over the whole day. This ensures that a representative sample is taken throughout the whole workday at the required flow rate. Data logging and download to computer is also available in the **Tuff Pro** models using the Casella Pump Manager software via a simple USB infra red interface link.

Ordering information

Tuff pumps are configured to order via the following selection matrix. All part numbers start with P30 then select the flow rate; 3 or 4.5 l/m and model variant that you want Basic, Plus or Pro; then the battery pack option; regular 1.7Ah or enhanced 2.7Ah, then select the single way charger if required. Eg. P30**XXXX**

| Model variant | 3000 ml/m Flow | 4500 ml/m Flow | Battery pack | Charger option | |
|---------------|----------------|----------------|--------------|----------------|----------|
| Tuff Standard | 31 | 41 | None | 0 | 0 |
| Tuff Plus | 32 | 42 | Regular 1.7 | 1 | 1 |
| Tuff Pro | 33 | 43 | Enhanced 2.7 | 2 | |

Example - Tuff Pro 4500 flow with enhanced battery and single way charger would be P304321

Operational Specification

| Feature Mix | Tuff Std Pump | Tuff Plus Pump | Tuff Pro Pump |
|--|---------------|----------------|---------------|
| Simple battery level indication | Yes | Yes | Yes |
| Basic flow set with external flow calibrator or rotameter | Yes | --- | --- |
| Manual start/stop for each run | Yes | Yes | Yes |
| Intelligent battery fuel gauge shows remaining run time hours | | | Yes |
| Set flow rate point independently of external calibrator or rotameter | | Yes | Yes |
| Displays set flow rate | | Yes | Yes |
| Displays actual sampled volume | | Yes | Yes |
| Displays actual sample duration | | Yes | Yes |
| Upgradeable to Pro version | | Yes | Yes |
| Fixed duration for run from manually selected start time with automatic stop at end of run | | Yes | Yes |
| TWA mode to spread required measurement over a complete total workday | | | Yes |
| 2 independent 9 x start and stop programmable date/times | | | Yes |
| Download of last 100 data logged events to Pump Manager software via IR communications | | | Yes |

Technical Specifications

| Common features for range | Tuff 3 Range | | Tuff 4 Range | | |
|---|---|-----------------|--|------------------|----------------|
| Minimum flow rate | 500 ml/m | | 500 ml/m | | |
| Maximum flow rate | 3000 ml/m | | 4500 ml/m | | |
| Optional low flow adaptor | Yes as external option | | Yes as external option | | |
| Battery pack Regular/Enhanced (4.8V 1700/2700 mAh NiMH) | Sealed rechargeable pack with integral charge indicator | | Sealed rechargeable pack with integral charge indicator | | |
| Flow control accuracy | <+/-3 % for selected flow | | <+/-3 % for selected flow | | |
| Flow performance at different back pressures | 1.0 liters/minute @ 31.5 in H2O 2.0 liters/minute @ 31.5 in H2O 3.0 liters/minute @ 12.6 in H2O | | 1.0 liters/minute @ 31.5 in H2O 2.0 liters/minute @ 31.5 in H2O 3.0 liters/minute @ 12.6 in H2O 3.5 liters/minute @ 12.6 in H2O 4.0 liters/minute @ 7.1 in H2O | | |
| Communications with computer (Pro versions only) | Infra red via 193200B USB interface to Pump Manager | | Infra red via 193200B USB interface to Pump Manager | | |
| Flow fault restart with alarm | Yes | | Yes | | |
| Weight oz (gm) | 17 (475) approx | | 17 (475) approx | | |
| Size in (mm) | 5.3 x 3.5 x 1.9 (133x87x47) | | 5.3 x 3.5 x 1.9 (133x87x47) | | |
| Typical battery life (hours) | Depends on filter cassette fitted and selected flow rate as below Typically greater than 40 hours at 2 l/m | | | | |
| Filter type | 1.0 liters/min | 2.0 liters/min | 3.0 liters/min | 3.5 liters/min | 4.0 liters/min |
| 25 mm GFA | 2.0 in, 103 hrs | 3.0 in, 48 hrs | 4.0 in, 26 hrs | 5.0 in, 19 hrs | 5.3 in, 13 hrs |
| 25 mm 0.8 µm | 6.5 in, 57 hrs | 11.0 in, 28 hrs | 15.0 in, 16 hrs | 17.0 in, n/a hrs | 19.0 in, n/a |
| 25 mm 1.2 µm | 4.5 in, 75 hrs | 11.0 in, 30 hrs | 10.0 in, 18 hrs | 11.8 in, 12 hrs | 12.5 in, n/a |
| 37 mm GFA | 0.5 in, 122 hrs | 1.5 in, 57 hrs | 2.0 in, 30 hrs | 2.5 in, 22 hrs | 2.6 in, 15 hrs |
| 5" backpressure | >33 hrs | >20 hrs | >13 hrs | >11 hrs | >3 hrs |