

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. P30XXX

Model variant	3000 ml/m Flow	4500 ml/m Flow	Battery pack	Charger option
Tuff Standard	31	41	None	0
Tuff Plus	32	42	Regular 1.7	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