

Operation manual

High power exhaust smoker for Benedini Soundunits

(Smoke oil based, Version II)



Full speed operation



(smoke oil and syringe are NOT scope of delivery!)

Features

- High power oil based smoke generator
- 40W heating power for excessive smoke generation
- smoke volume and speed is adjusted according to the model state
- controlled from external Benedini soundunit (TBS Mini V1 and V2, **NOT TBS5** → see last page)
- Metal box housing
- two box sizes available (see below)
- 12 or 24V version
- 1 or 2 smoke exits
- Horizontally or vertically orientated.
- Delivered as a mechanical **kit**, including all necessary components for **self construction**

System of operation

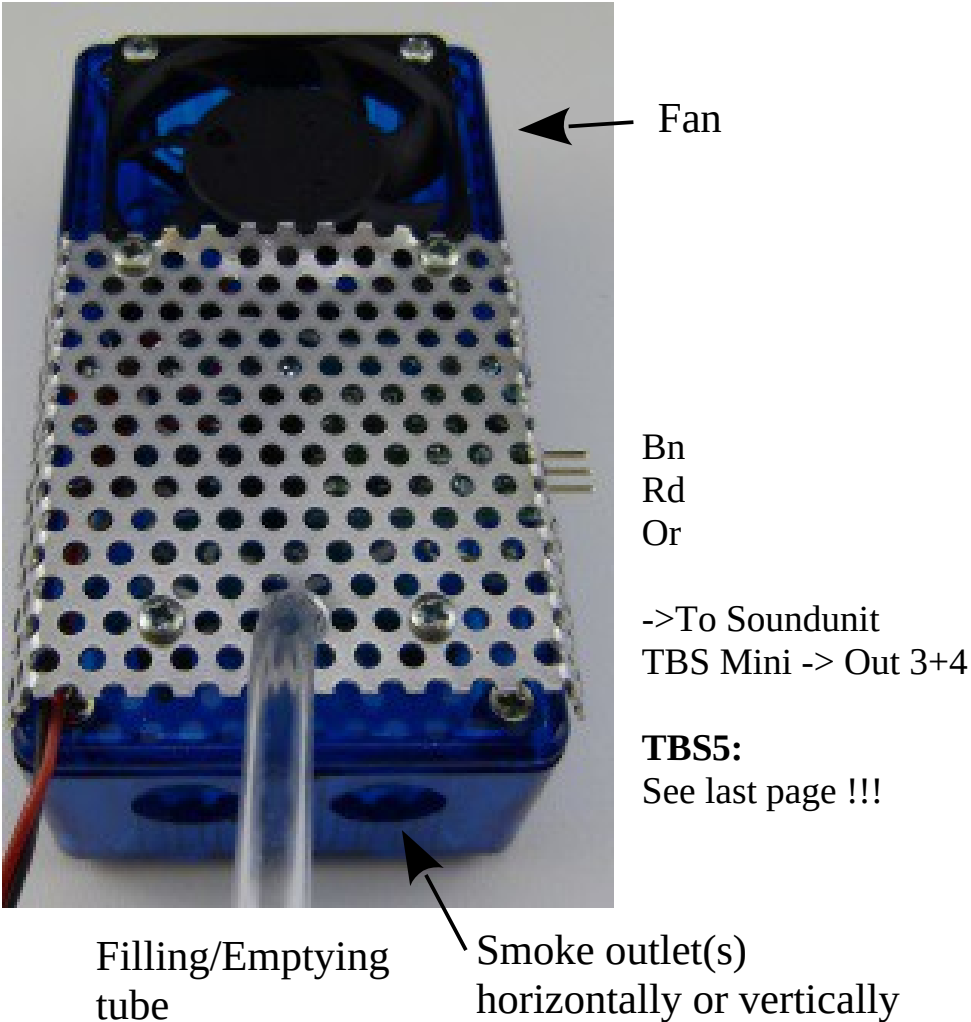
This high power electronic smoke generator module is intended to be used in any land vehicle or boat. It is designed to be combined with the Benedini **TBS Mini V1 and V2** sound unit (**NOT TBS5!**). It provides for exhaust smoke to be generated both proportionally and synchronised to the speed of the vehicle and the engine sound emitted by the Sound Unit. The smoke controller has **galvanic isolation** from the sound module and the receiver.

The method of operation is for smoke fluid to be heated by the heater elements (the smokers) and the smoke produced blown out of the smoke accumulation reservoir by the fan in a volume dictated by the speed of the vehicles motors/engine sound module. The system although simple in its operation is totally reliable and effective and produces a scale effect that will enhance any models appearance.

The complete unit consists of a speed controllable fan, a smoke + oil box, a control unit and **two** or **four** smoke elements (smokers) dependant on the scale of the vehicle it is fitted to that are operated and that are switched on and off electronically according to the speed of the motor(s).

During starting or accelerating a large volume of smoke will be produced. When the model is moving, all heating elements are active and the fan speed is electronically adjusted proportionally to the model speed to deliver a realistic volume of exhaust smoke.

Pictures below show a transparent plastic housing for internal view but are also valid for the metal version.



To Battery
red = +
blue **AND** black = -

Filling/Emptying
tube

Smoke outlet(s)
horizontally or vertically

Bn
Rd
Or

->To Soundunit
TBS Mini -> Out 3+4

TBS5:
See last page !!!

Installation and operating advice

1. Smoke exit outlet can be drilled **horizontally** (standard) or **vertically** in the smoke box

2. Smoke outlet tube installation:

The tube(s) must have a **permanent rise** for allowing condensed oil dust running **back** into the box. Prevent any sagging of the tube, otherwise condensed smoke can close the tube.

The tubes should be feed **STRAIGHT** to the exhaust without many corners between.

If two exhausts are desired, use a tube for **each** of them. T-fittings are not recommended.

If very long exhaust tubes are necessary, a **radial** fan can be used instead of the standard axial fan but requires more installation space! Such a fan can be ordered separately.

Various different smoke effects can be achieved by experimenting with the exhaust pipe(s) and their fittings. The effect may not however be ideal for all models and the purchaser is advised to experiment until they are satisfied with the result.

3. The box must have a certain **inclination** in the model !

The **refilling** side of the smoke box must be slightly **raised**. This ensures proper indication by the filling tube if the oil level runs low.

4. Smoke oil filling

Initial smoke oil filling:

a) Soak the according **refill volume** by the syringe out of the oil container.

→ See box depending filling volumes in the technical data section !

b) Fill the smoker box through the filling tube.

c) **Empty** the smoker box again by soaking the oil out the box through the filling tube. Use again the syringe.

d) Now the **minimum oil level is remaining** in the box.

e) Refill the box with the recommended oil volume.

Refilling smoke oil before/during operation:

a) **Empty** the smoker box by soaking the remaining oil out of the smoker box, by using the supplied syringe. This avoids overfilling!

b) Refill the box with recommended oil volume.

→ See box depending filling volumes in the technical data section !

!!! Refill indication !!!

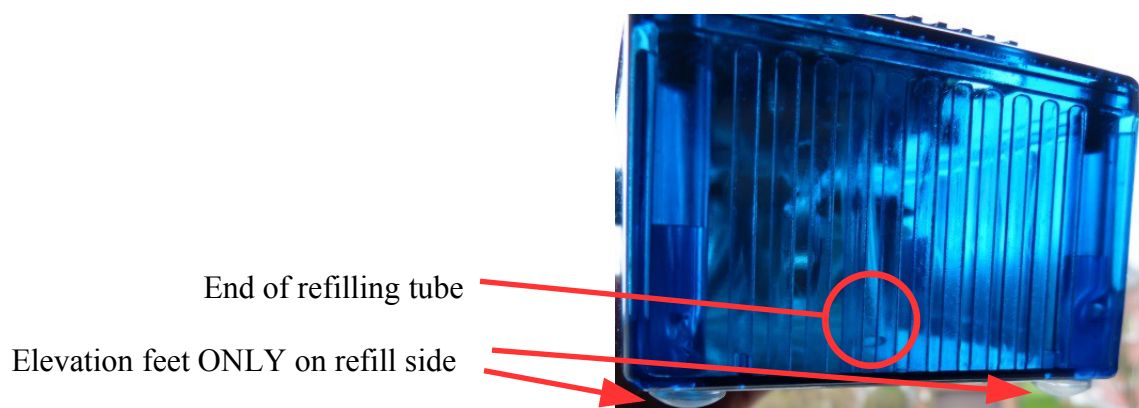
If smoke oil runs low during operation, smoke exits the refill tube. This can be seen **clearly**. Refill the according oil volume directly !

!!! NO WARRANTY ON BURNED HEATING ELEMENTS OR OTHER DAMAGES DUE TO OVERHEATING !!!

Connecting the Oil Smoke II controller to a TBS5 sound unit:

→ See last page of this manual !!!

Make sure the refill tube lasts not less than **5 mm until bottom** of the housing.
 This **MUST** be to ensure refill indication by smoke.



Technical data

Operation Voltage: _____

Tube diameter smoke outlet: ~10mm (inside) ~ 14mm(outside)

Current draw (at full speed):

# Heater	Current 12V version	Current 24V version
2	~2,5A	~1,3A
4	~ 5A	~2,5A

Oil consumption (at full speed):

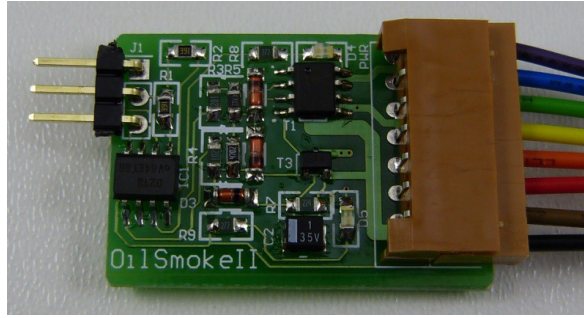
2 Heater	4 Heater
40ml = ~20 min operation time	40ml = ~10 min operation time

Box dimensions + refill volume:

Box Type	Dim. (LxBxH)	Weight (without oil)	Max. refill volume	Operation time about
Plastic Standard	120 x 65 x 52 mm	~ 160g	40 ml	10 min
Plastic Large	150 x 80 x 62 mm	~ 210g	200 ml	50 min
Metal Standard	115 x 63 x 70 mm	~ 220g	150 ml	30 min
Metal Large	115 x 90 x 70 mm	~ 280g	220 ml	55 min

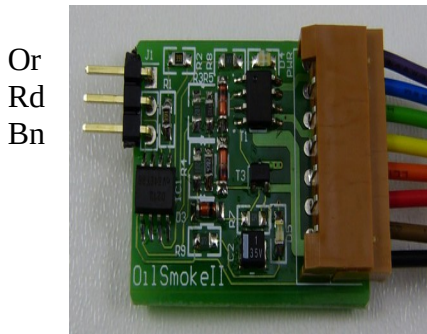
Electrical connections

← Or
Rd
Bn
To TBS Mini
Out 3+4



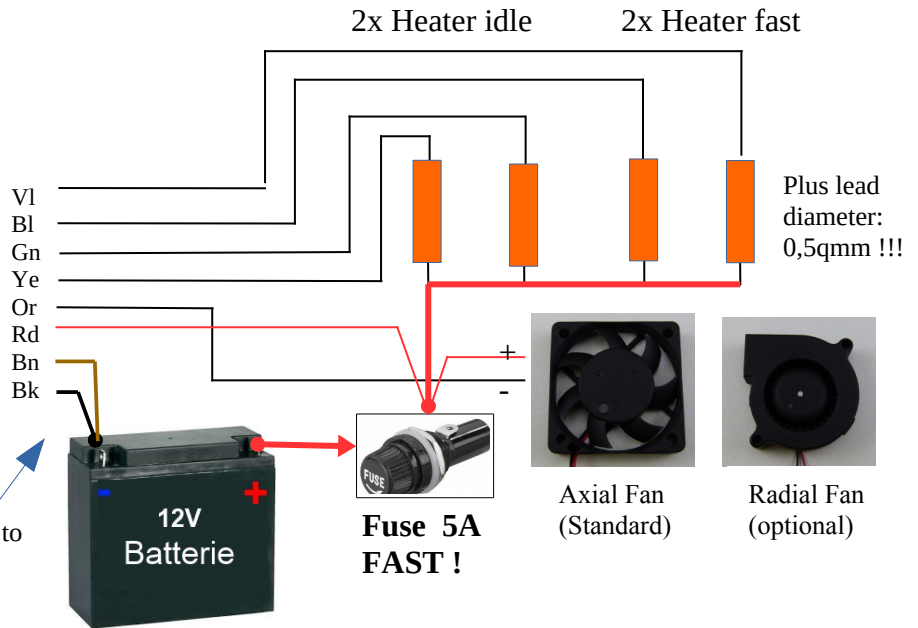
From top to bottom:
 Vl: - Heater fast A
 Bl: - Heater fast B
 Gn: - Heater idle A
 Ye: - Heater idle B
 Or: - Fan
 Rd: + Battery
 Bn: - Battery A
 Bk: - Battery B
!! connect Brown AND Black !!

12V Operation (2, 3 or 4 heaters possible)

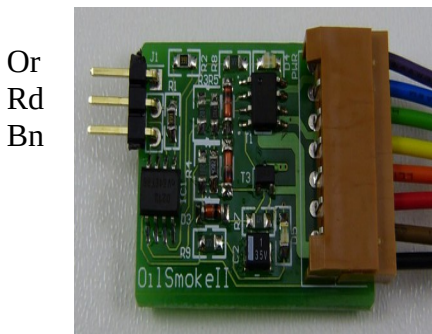


Or
Rd
Bn

Brown AND Black TOGETHER to Minus Battery !!!

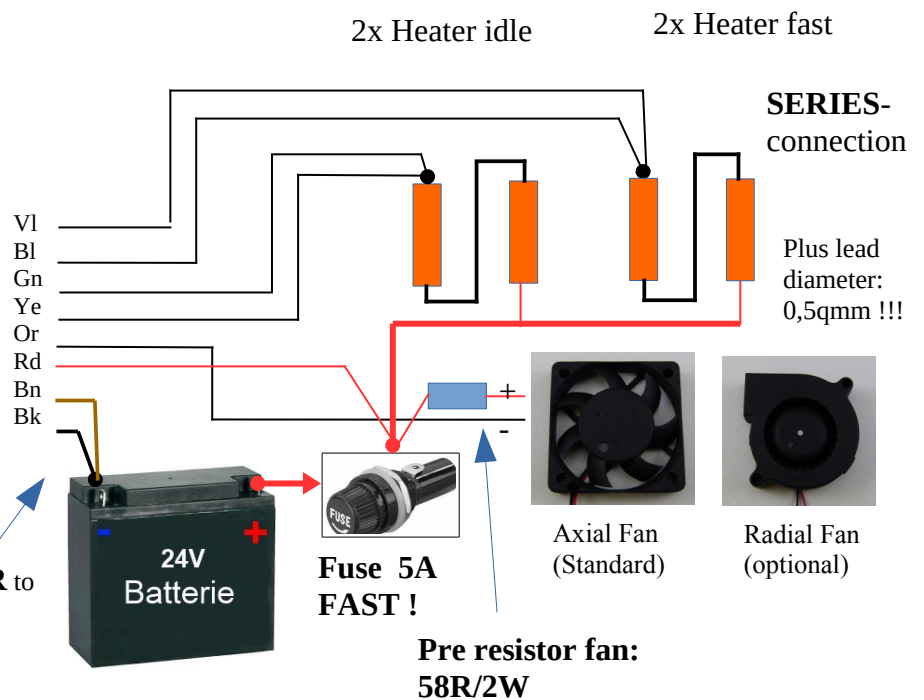


24V operation (only 4 heaters possible)



Or
Rd
Bn

Brown AND Black TOGETHER to Minus Battery !!!



Hints for electrical installation

1. The +battery cable MUST be fused ! Fuse is included → see below.

2. The recommended diameter for the plus lead going to the heaters is **0.5 qmm**.

3. The brown **AND** black lead coming from the controller must be connected **BOTH** to Minus battery !!!

4. **24V** operation is only possible with **4 heaters**. Two of them are connected in series.

In addition a **pre resistor** is necessary for the 12V fan! See diagram above.

12V operation is possible with 2, 3 or 4 heaters.

→ less current + less oil consumption → LESS Smoke !

The + battery cable MUST be fused ! Fuse holder and fuse are included in the kit.

Type of fuse: 5A fast characteristic

Any damages in the smoke controller area shown below are definitely out of any warranty !!!



Such damage results from damages on the heating elements caused by overheating. Watch oil level !

If connected to the **TBS5** sound unit → see last page !!!

Safety / Danger hints

1. The smoker must be operated only outside. Smoke/Dust can be injurious to health !
2. Operate smoker only under survey.
3. Smoker is NOT suitable for children.
4. Use **ONLY** smoke oil, intended for model train application. SR24 oil recommended.

WARNING to SR-24 smoke oil, according to EU-law:

Xn: Injurious to health

R65: May cause lung injury

S2: Must not be accessible to children

S46: In case of swallowed, contact physician / doctor (med.) immediately and show bottle.

S62: In case of swallowing do NOT cause throw up / vomiting.

Manufacturer of SR-24 smoke oil:

Hans Weiss, Im Breiten Baum2

72657 Altenried, Germany

Phone: +49 (0)712-35020 Fax:-21616

E-Mail: hans.weiss@geromail.de

Warnhinweise!
Lt. EG-Verordnung:



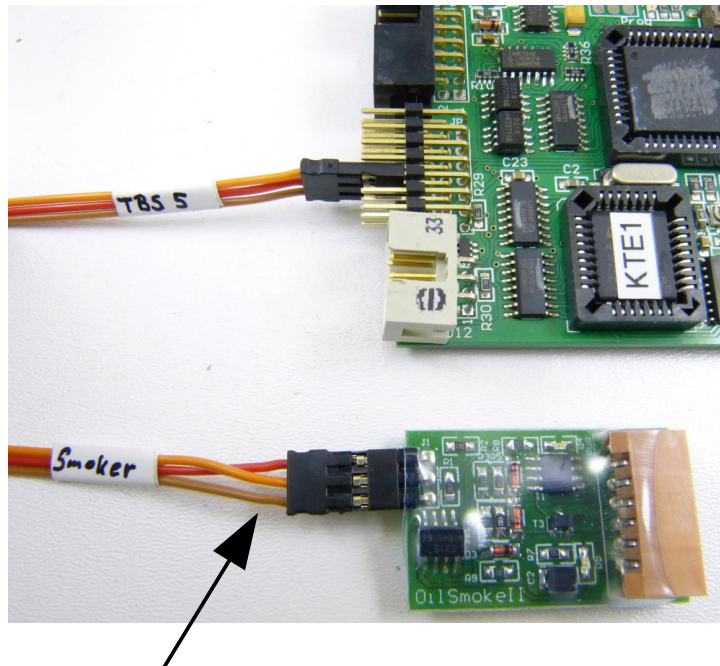
Xn: Gesundheitsschädlich.
R65: Kann beim Verschlucken Lungenschäden verursachen
S2: Darf nicht in Händen von Kindern gelangen.
S46: Bei Verschlucken sofort ärztlichen Rat einholen und SR-24 Flasche vorzeigen.
S62: Bei Verschlucken kein Erbrechen herbeiführen.

Telefon: 07127- 35020



Seit 45 Jahren ist SR-24 ein bewährtes Qualitätsprodukt
Gesundheitliche Schäden sind bisher nicht bekannt

Connecting the Oil Smoke II controller to a TBS5 sound unit



TBS5 Soundunit
(3rd plug from bottom)

Oil Smoke II controller

1. Watch the crossed leads in the servo plug at the smoke controller.
Orange and red lead must be changed.
2. Set the “Smoke Type” parameter setting of the TBS5 to OIL smoker
→ Parameter Nr. 3 must be set to Value 1
(See TBS5 manual on page 11)

!!! If this is not checked, the smoker will be damaged !!!

Technical changes reserved
Not suitable for kids!



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