

Fit SOUND in any Train!

NEW SFX 21+ Diesel sound capsule

- Fits in seconds with no wiring - self contained
- Tiny capsule fits in locos, wagons, coaches etc
- Motion sensor replays sounds automatically
- Easy - no pickups so works on both DC & DCC
- Plays real sounds recorded from real trains
- Plus version includes adjustable volume link
- Pack includes Capsule, Sound Tube & Battery

Tickover Turbo Horns
Speedup Compressor




Image Courtesy
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www.Train-Tech.com

See our website, your local model shop or contact us for a free colour brochure
DCP Microdevelopments, Bryon Court, Bow Street, Great Ellingham, NR17 1JB, UK
Telephone 01953 457800 • email sales@dcpmicro.com • www.dcpexpress.com

Ideas for fitting SFX into N gauge

Unlike some of our other products it is not possible to power the SFX from any battery smaller than the CR2032 which is 20mm in diameter and so is too large to fit into most N gauge locomotives or stock. However with a little imagination it is possible to use SFX in N gauge trains.....

Fitting SFX inside N gauge stock

You can also fit SFX into an N gauge coach or long wheelbase wagon like this box van. The extra height required is gained from cutting a slot in the base of the coach or wagon and fitting the SFX with a trimmed down sound tube horizontally so that it just underhangs between the wheels. It is hardly noticeable once fitted!

To help let more sound out we trimmed some of the inside rim of the roof before refitting it, holding it slightly proud of the box van sides using a small piece of Blu-Tack or similar at each end of the roof.

Note: This method of fitting requires modest modelling skills to cut the slot in the base of the stock.



Making the SFX an irregular load

A quick and easy method of using SFX with N gauge is to mount and disguise SFX on a flat wagon as an 'irregular load' as the picture below.



SFX21+ Diesel sound



Train-Tech products are designed and manufactured in Great Britain

www.train-tech.com

A full fact sheet on fitting SFX into N is available on www.Train-Tech.com

Problems, hints and tips....

Sound too quiet?

Use the sound tube supplied, make a sound box or adjust the volume - see details overleaf. Don't forget to make holes to let the sound out!

Clicking, Repeating or broken sounds?

If you hear repeating or odd broken sounds the battery needs replacing. Remove it using finger nail under battery at **gold connector end first**.

Battery

The SFX+ uses the popular CR2032 battery available from discount stores and online - also in packs of 3 as Train-Tech BAT1. Battery life will depend on your volume setting and how often you use the train it is fitted in, but you will normally get many hours of sound from a new battery, even longer if it is rested occasionally because this gives the battery time to recover.

Motion sensor too sensitive?

The motion sensor contains a tiny 0.6mm gold plated ball bearing to detect movement. If you find it is too sensitive to other trains passing etc you can slightly adjust sensitivity by changing orientation of the sensor to point it upwards, or wrapping the sensor in a small piece of foam. But keep it away from the SFX speaker and the loco motor and do not let it touch the inside of the model or this may make it overly sensitive.

How can I turn SFX off?

SFX turns itself on and off automatically with motion, but you can turn off SFX temporarily by holding a strong magnet close to the sensor outside the model which stops the ball bearing moving - useful for transporting trains quietly!

Take Care!

Never apply more than 3 volts at correct polarity & protect the speaker and all circuit parts from damage from damp, wet or higher voltages.

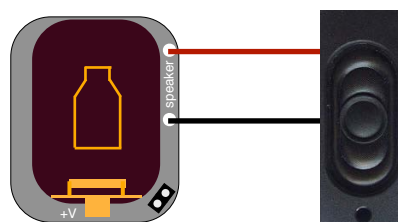
Modifications to SFX+ : recommended for dealers and advanced modellers only

Caution - these modifications require good soldering skills and may invalidate your warranty

Using SFX+ with other loudspeakers

The SFX Plus capsule allows you to connect and use a different speaker *instead* of the one fitted. Almost any loudspeaker of 8Ω (8 ohms) should be suitable and includes many 'sugar cube' and 'bass reflex' speakers designed for model use as available from many DCC sound specialists. To connect a different loudspeaker first you **must** disconnect the existing SFX speaker:

- Remove the battery.
- Using plenty of light look at the edge of the capsule marked 'speaker' and identify both fine wires connecting the speaker and circuit board. Using a **very fine** pair of wire cutters choose either of the wires and carefully cut it at both the speaker and circuit board end and discard so that none is left to stray and touch other circuitry.
- Strip **short** lengths of insulation off the wires from your new speaker, tin ends and carefully solder them onto the solder pads either side of the word 'speaker' on the printed circuit board.
- Check connections, refit the battery and test



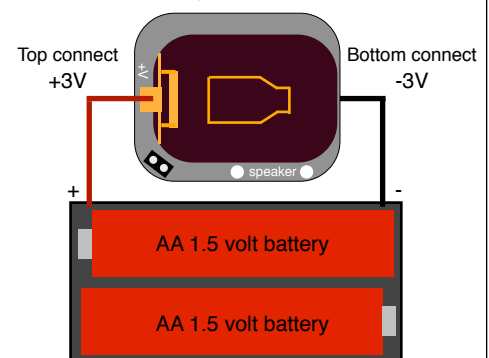
Note that you **must** disconnect the internal loudspeaker before connecting an external one otherwise you will overload the amplifier circuitry. NB The SFX speaker is bonded to the main microchip - not recommended to try & remove!

Powering SFX+ from larger batteries

The SFX+ is normally powered by a 3V CR2032 coin cell battery to keep the size of the capsule down, but although these are low cost & readily available can be inconvenient for long periods of sound such as exhibitions, shop displays etc. So if space is available in the locomotive or stock then 2 x alkaline AA cells, for example, will power the SFX for much longer and a 2 x AA holder will just fit inside many OO or larger gauge models - you can also add an on-off switch if you wish.

VERY IMPORTANT: Note that the SFX must be powered by **3 Volts DC maximum with correct polarity** or irreparable damage WILL result!

- Remove the CR2032 battery - do not refit!
- Solder red + positive wire from new battery holder to pad marked +V on circuit board
- Solder black - negative wire from new battery holder to the solder pad at the opposite end of the SFX+ board just underneath the speaker
- Check connections, then fit new batteries



WARNING: Correct polarity & 3 volts MAXIMUM!

SFX21+ Diesel Locomotive Sound Capsule [ID dot colour on gold clip = Pink]

Pack contents: SFX+ sound capsule, Flexible sound tube, CR2032 battery, instructions.

Introduction SFX is a self contained sound capsule for model trains and requires no connections because it is battery powered and uses a motion sensor to detect whether it is stationary or moving and a microprocessor to play appropriate real train sounds! No on-off switch is required because it turns itself on automatically as soon as it moves, then switches off after it has been still for a while to preserve battery.

SFX21 Classic Diesel Loco Sounds (note that others are available for Steam, DMU, Coaches, Goods shunting - see Train-Tech brochure) These are the sounds you can expect to hear from your SFX21. They are not simulated effects but real sounds recorded by us from Class 31 locomotives No D5631 (31207) on the North Norfolk Railway (www.nnr.co.uk) and No 31235 on the Mid Norfolk Railway (www.mnr.org.uk)

- Stationary - Engine Tickover sound and occasional compressor cutting in and out
- Any movement triggers the sound of air release and if motion continues a single horn sounds followed by gradual speed up
- After speed up engine power is maintained on this version until the locomotive stops moving (the SFX20 includes some coasting)
- The two tone horn sounds after the loco travels continuously for a while
- When motion stops it returns to stationary sounds.
- If there is no motion for over a minute the SFX automatically goes to sleep and waits for slight movement to wake it up.

PLEASE READ THESE INSTRUCTIONS BEFORE USING YOUR SFX+

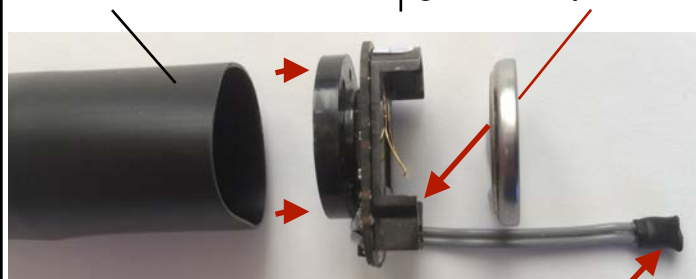
Test driving your SFX Sound capsule....

Getting the best from your SFX will depend on how & where you install it, so before you permanently fit it inside a model we recommend you just try placing it in something like an open wagon first, either being pulled by a loco or just pushed along with your fingers.

1 Ease the flexible sound tube over the speaker - use a finger to help shape the tube if it is flat

2 Fit **CR2032** battery into the holder + side up - slide **under gold metal clip side FIRST**

3 Place the SFX into an open wagon or similar, tucking the motion sensor away from the speaker, then put it on a track and leave it to settle... you should then hear its Resting sound



This is the Motion Sensor - always locate this **away** from speaker and not touching other surfaces in the model as it is very sensitive!



A minute after it last moves the SFX should sleep until it detects movement again. (if it does not try changing the orientation of the motion sensor or move it further away from the speaker)

Driving to the sound....

You will be able to hear all of the sounds described at the top of this page and many will be best experienced by 'driving to the sound'. The SFX only knows whether it is stationary or moving, not how fast it is going, but it's on board microcomputer constantly monitors motion and time to only increase sounds at a realistic rate (in other words real trains cannot go from 0-60 in 1 second unlike your models can!). However you can effectively make your SFX reproduce the sounds you want by modifying the way you drive your train. For example if you have some slow shunting to do and you do not want your train to sound too fast, then drive for a few seconds, stop a moment then start moving again - the SFX will slow down and you can recommence shunting with the slower sounds. The secret of getting the best from your SFX is practice and experiment - but whatever you do have fun with real sound!

Getting the best and loudest sound....

The best quality and loudness of sound from your SFX fitted train will be governed mainly by effective speaker installation. You could simply drop your SFX into a locomotive or other stock like a tender, coach or vented cattle wagon and run it with the sound tube as shown above, but like any sound system the quality of sound will greatly depend on how the speaker is mounted just as much as amplifier volume.

Making best use of the sound tube

We include a sound tube with each SFX to enable you to quickly and easily try it, although this can be used as part of a more permanent installation. The tube can be bent or cut down with scissors to fit into spaces, though longer tubes usually sound richer & louder. But you can try making better sound tubes using card, plastic or bottle tops to fit in your model - you will be surprised what a little experimentation with different materials can achieve - look at what a difference the tube makes to the SFX speaker volume and richness when you fit it! The best location for SFX will probably be dictated by the optimum speaker position, but do allow for relatively easy access to change the battery from time to time.

Using your model as a sound box

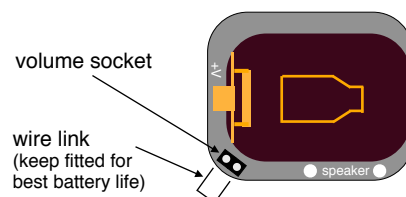
One ideal installation comes from sealing the SFX speaker face down flat into the base of a loco, tender or wagon body and drilling holes in front of the speaker for the sound to come out underneath, the body then acting as a sound box to boost volume and make a richer sound. (one of the main purposes of the sound tube or enclosure is to prevent the sound waves coming from the front of the speaker effectively cancelling out or distorting opposing sound waves from the back of the speaker).

Increasing the volume of the SFX amplifier

We designed the SFX to be as small as possible so that it could be fitted in most models, but the tiny coin cell battery limits the amplifier volume and battery life available. SFX+ capsules are supplied with the volume preset to a medium setting as a reasonable compromise between volume and battery life. However SFX+ does have a facility to adjust the amplifier volume and make it louder, though with a corresponding reduction in battery life. As supplied, the SFX+ has a small link wire plugged into the volume socket (shown right). Unplugging this link wire with fine nose pair of pliers will increase the volume by around 35%.

Although it may be tempting to increase the volume just by removing this link, remember that it will significantly reduce battery life and is not a substitute for a good enclosure for the speaker to give your train a richer higher quality sound. (If you need longer battery life & have space for larger batteries please see overleaf).

Location of volume socket on SFX Plus



Tech-Tip

If you wish to set the volume in between the medium and maximum levels you can plug in a small fixed resistor of between 0 and 22 kΩ or use a variable or preset resistor as a volume control, available from electronics suppliers. Keep wires short and do not allow either of the volume sockets to make connection with anything else! (NB 7.5kΩ is approx mid volume)