

OWNER'S MANUAL

T5

Five-chime train horn, printed solid. Installation, use, maintenance and parts.



CHIMES

Five bells

AIR INLET

1/2 in NPT

MOUNT

Low, foot down

REAR CAPS

M5 × 0.8, nylock

Read this manual and every safety instruction before you install or sound the horn. Keep it with the horn and pass it on with it.

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About this manual

It covers the T5 in its standard low mount (the foot is the lowest point and stands on your bracket) and the high mount option. It explains how to mount the horn, give it air, sound it safely, keep it sounding right, and rebuild it.

Every drawing is made from the T5's own design files, and every size and part number in it has been checked against them. Part numbers (T5-01 and so on) match the spare parts in the shop.

Left and right are always as seen from the front, looking into the bell mouths.

How safety information is shown

**WARNING**
Could cause death or serious injury.

**CAUTION**
Could cause minor or moderate injury.

NOTICE
Damage to the horn or property, or the law. Not a personal-injury hazard.

Symbols used

 4 mm hex key cap screws

 8 mm wrench lock nuts

 Hand tools only
no drill or impact driver

 Star order
opposite sides, a little at a time

 Quarter turn
after finger tight

 Hearing protection

 Eye protection

SECTION 1

Safety

The T5 is a train horn that runs on compressed air. Used carelessly it can hurt you or someone near you. Read this whole section before you connect air.

HAZARDS	HEARING	EYES	SKIN	IMPACT
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 **WARNING**

Hearing damage.

The T5 is extremely loud. Close to the bells it can damage hearing in a fraction of a second.

- Wear hearing protection every time you test it.
- Keep people and animals well away from the bell mouths. Never sound it next to someone's ears.
- Do not sound it inside a garage, shop or any closed space.

 **WARNING**

Compressed air.

A failed hose, fitting or plastic part can release air and pieces with force. Air blown at the skin or eyes can injure.

- Use a pressure switch and a tank with a working relief valve. Every part of the system must be made for the pressure you run.
- No pressure rating has been established for the T5. Start well below the pressure you plan to use and step up slowly (page 16).
- Keep your face and body out of line with the bells and fittings during the first tests. Wear eye protection.
- Release all the air and disconnect the valve's power before you work on the horn or any fitting.
- Use clean, dry air only. Never other gases, fuels or liquids.

 **WARNING**

Vehicle air brakes.

Never tee the horn into a vehicle's air-brake system. A horn that drains the brake supply can leave you without brakes.

- Give the horn its own compressor and tank, or use the vehicle maker's approved accessory port with a pressure-protection valve.

 **WARNING**

A horn that comes loose.

A horn that breaks free on the road can strike other people and vehicles.

- Bolt the foot to steel structure with all four bolts (page 13). Never to plastic trim or a bumper cover.
- Check the mounting before every trip.

⚠ CAUTION

Over-tightening cracks plastic, and it is not covered.

The horn is printed plastic, not metal. A cranked bolt cracks it, often a day or a week later, after the first few runs. Over-tightening is the most common cause of a cracked foot or rear cap, and a part cracked this way is not covered by the warranty: it has to be bought new.

- Hand tools only. Never use a drill-driver, impact gun or cheater bar anywhere on the horn.
- Foot: four 1/2-13 bolts with SAE flat washers and **nylock nuts**. Never split lock washers or star washers: they bite into the plastic and take far more force to flatten than the foot can carry.
- Rear caps: nylock nuts, star order, snug. They hold wherever you leave them; you never need force.
- Every other bolt: finger tight, then a quarter turn more. Then stop.

⚠ CAUTION

Heat.

The horn is plastic. It softens at about 158 °F (70 °C).

- Keep it at least 12 in (30 cm) from the exhaust, turbo, brakes, radiator hoses and anything else hot.
- Do not leave it in a closed vehicle in the sun before it is installed.

⚠ CAUTION

Damaged parts.

- If any part is cracked, warped or leaking, stop using the horn and replace the part first.
- Inspect the horn after any knock, and on the schedule on page 17.

⚠ CAUTION

Children.

The horn is not a toy. It has small parts and runs on compressed air. Keep it, its valve and its button away from children.

NOTICE

The law.

Many states and cities restrict train-style horns on public roads and set noise limits. You are responsible for knowing and following the rules where you install and sound the horn.

NOTICE

Not a safety device.

The T5 is not an emergency or life-safety signal device. Do not rely on it to warn of danger.

Safety label

The horn carries a warning label on the front of the manifold post. If it is missing or can't be read, contact The Unordinary Depot for a new one before you use the horn.

SECTION 2

Know your T5

Five bells on one manifold. Air comes in through the 1/2 in NPT inlet in the centre of the foot and is shared out to every bell. Each bell has a rear stack behind its cap that makes the sound (page 18). The red numbers are the bell numbers used everywhere in this manual.

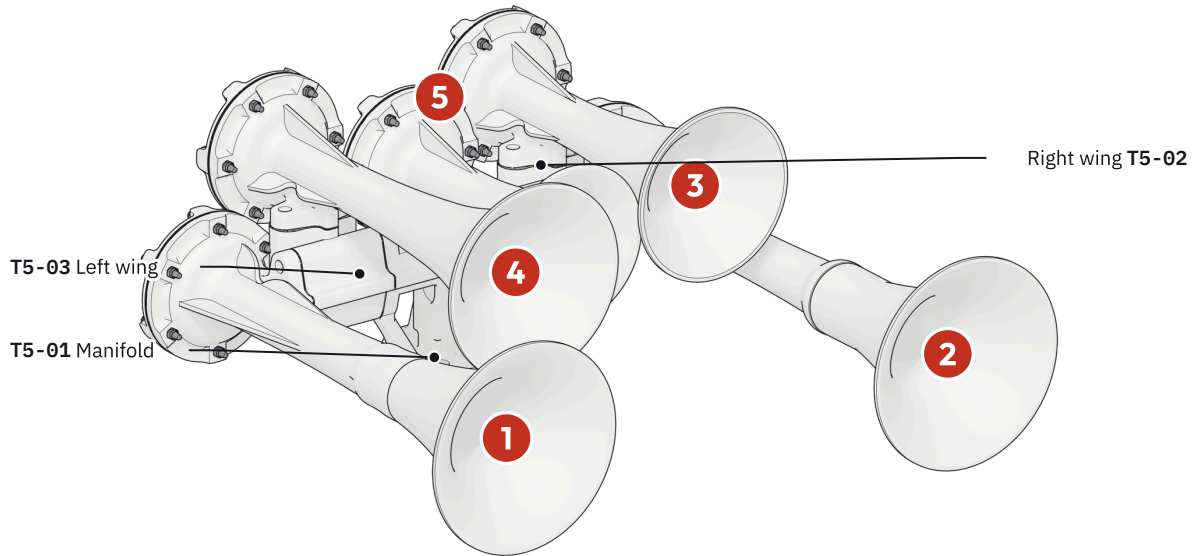


Fig. 1 Front, low mount. Bells **1** and **2** are the long bells low on the wings; **3** and **4** sit above them; **5** is on top.

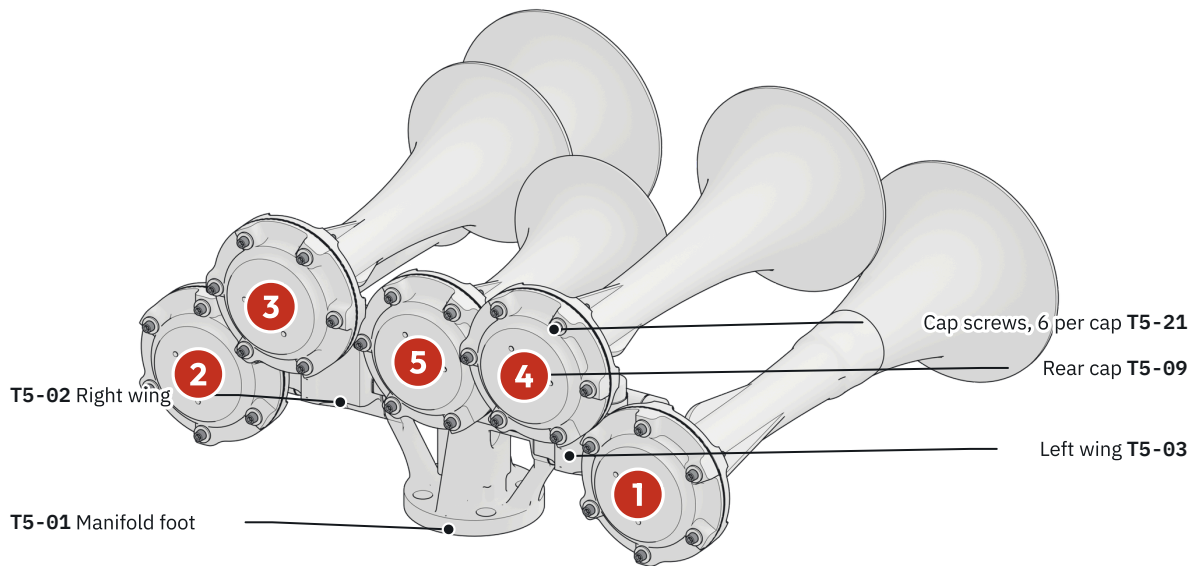
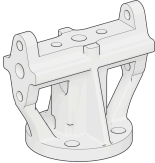
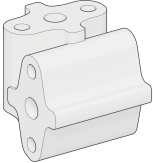
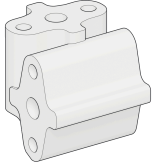
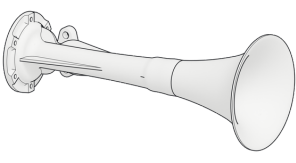
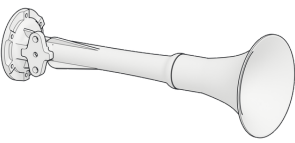
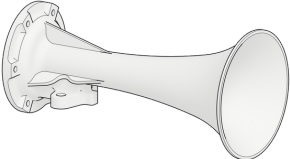
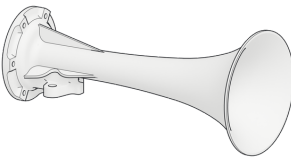
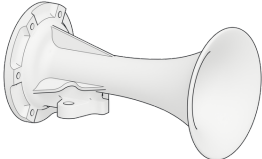
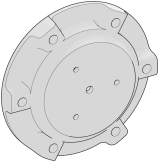
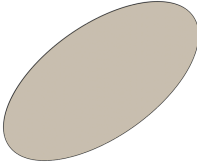
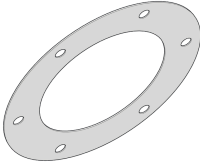
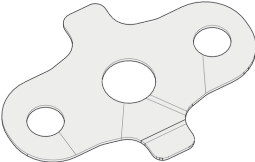
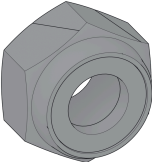
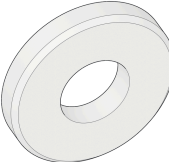


Fig. 2 Back. Each rear cap carries its bell's number. Six black M5 cap screws hold each cap; their nylock nuts sit on the bell flange, out of sight. On bells **1** and **2** the screw next to the wing is reversed: its nut is on the cap.

SECTION 2

What's in your horn

Every part, its number and how many a five-chime horn has. Order spares by part number at unordinarydepot.com.

 T5-01 Manifold PETG, printed solid ×1	 T5-02 Wing, right PETG, printed solid ×1	 T5-03 Wing, left PETG, printed solid ×1	 T5-04 Bell 1 PETG, two sections ×1
 T5-05 Bell 2 PETG, two sections ×1	 T5-06 Bell 3 PETG ×1	 T5-07 Bell 4 PETG ×1	 T5-08 Bell 5 PETG ×1
 T5-09 Rear cap PETG ×5	 T5-10 Diaphragm Ø 85 × 0.2 mm, tan ×5	 T5-11 Rear gasket TPU, 0.8 mm ×10	 T5-12 Nozzle seal TPU ×5
 T5-13 Mount seal TPU, 2 mm ×7	 T5-21 Cap screw M5 × 0.8 × 40 mm, socket head, black ×30	 T5-22 Lock nut M5 × 0.8, nylon insert, black ×30	 T5-23 Cap screw washer PETG, 13 × 5.5 × 2 mm, printed solid ×30

Kits

T5-14 Rear cap hardware set 6 × T5-21 cap screws, 6 × T5-23 washers and 6 × T5-22 lock nuts: one rear cap Shop: Rear cap and hardware › Bolt and nut set (6)	T5-15 Chamber rebuild kit 2 × T5-11 gaskets and 1 × T5-12 nozzle seal: one bell (diaphragm sold separately) Shop: Chamber rebuild kit › One chamber	T5-16 Gasket pair 2 × T5-11: one bell Shop: Seals and gaskets › Gasket pair (one chamber)
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SECTION 2

Specifications

Model	T5: five chimes (bells 1 to 5) on one manifold
Material	PETG, printed solid. Gaskets, nozzle seals and mount seals in TPU.
Size, low mount (standard)	21.5 × 20.6 × 10.0 in (547 × 524 × 255 mm), W × D × H. The foot is the lowest point.
Size, high mount (option)	15.8 × 20.6 × 12.8 in (401 × 524 × 325 mm). Bells 1 and 2 hang 3.0 in (77 mm) below the foot.
Weight	About 11.5 lb (5.2 kg) with all hardware
Air inlet	1/2 in NPT, female, in the centre of the foot
Mounting	Four 1/2-13 bolts with SAE flat washers and nylock nuts, on a 3.00 in (76.2 mm) circle. Foot Ø 4.00 in (101.6 mm), 0.50 in thick, holes 9/16 in.
Bell lengths	Bell 1: 16.25 in · Bell 2: 18.59 in · Bell 3: 11.00 in · Bell 4: 13.50 in · Bell 5: 8.53 in
Rear stack, each bell	Nozzle seal, 0.8 mm gasket, Ø 85 × 0.2 mm diaphragm, 0.8 mm gasket, rear cap. Six M5 × 0.8 × 40 cap screws with nylock nuts on a 4.000 in circle.
Pressure	No pressure rating has been established. Set the pressure switch below your lowest-rated part and follow the first run on page 16.
Temperature	Keep below 158 °F (70 °C).

2
YOUR
T5

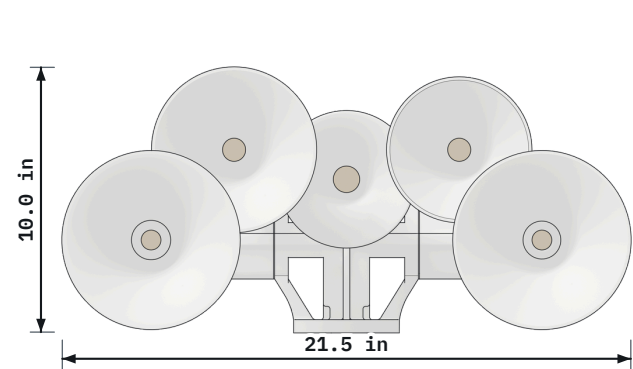


Fig. 3 Low mount (standard), front

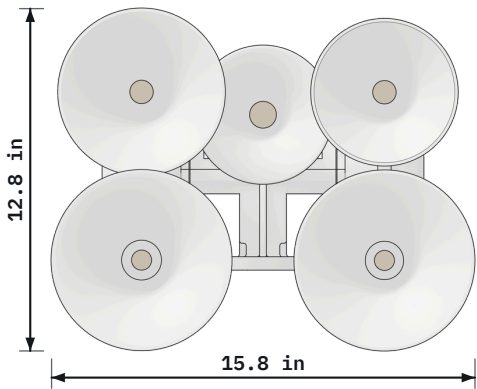


Fig. 4 High mount (option), front

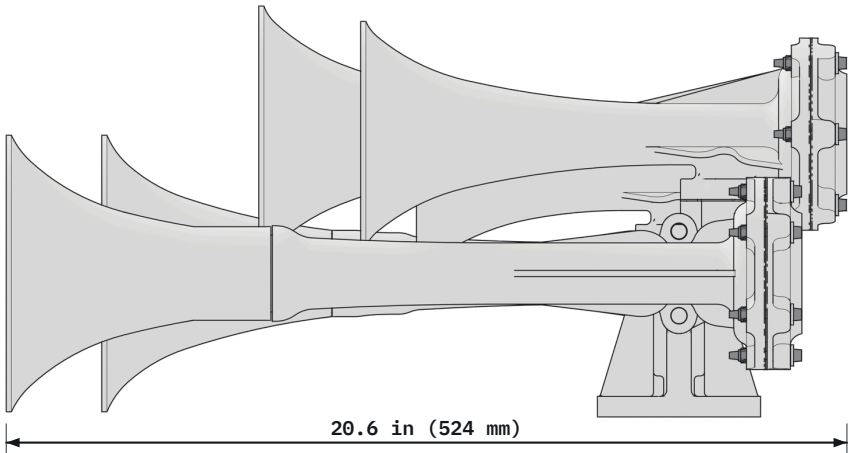


Fig. 5 Side view. Bell mouths face forward, to the left here.

SECTION 3

Hardware and tools

The rear caps are the only fasteners you will normally touch: black M5 × 0.8 metric hardware, six screws on printed washers and six nylock nuts per bell. Two of the thirty screws are reversed (head on the flange, nut on the cap): the one next to the wing on bells 1 and 2.



T5-21 Cap screw, M5 × 0.8 × 40 mm
Socket head (ISO 4762 / DIN 912), black. 4 mm hex key. 30 per horn.

T5-22 Lock nut, M5 × 0.8, nylon insert
DIN 985, black. 8 mm across the flats. 30 per horn.

T5-23 Washer, 13 × 5.5 × 2 mm
Printed PETG, one under each screw head. 30 per horn.

Printed at actual size: lay a screw or nut on it to check it. The 10 mm bar must measure 10 mm.

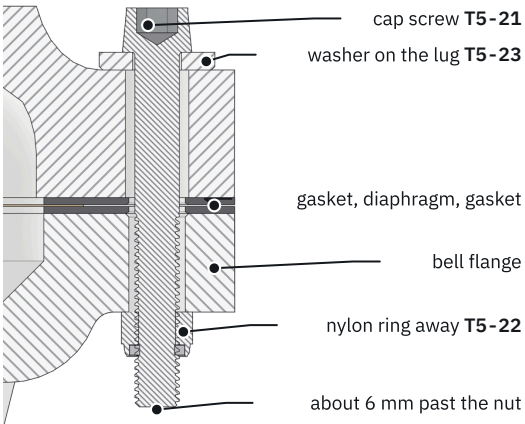


Fig. 6 One cap screw, cut through.

Tools



4 mm hex key
cap screws



8 mm wrench
holds the lock nuts



Two 3/4 in wrenches
foot bolts and nylocks



PTFE tape
inlet thread



Soapy water
leak checks



Pencil
marks the caps



Hand tools only

How tight

JOINT	HARDWARE	TOOLS	HOW TIGHT
Rear caps	6 × M5 cap screws on washers, nylock nuts	4 mm hex key, 8 mm wrench	Hold the gaskets, diaphragm and cap centred. Run every nut on until it just touches. Tighten in the star order, a little at a time, two rounds, until snug. Tune one bell at a time in 1/8 turns. Bells 1 and 2: the screw next to the wing goes in from the back, head under the flange, washer and nylock on the cap. Build those two stacks before the bell goes on the wing (high mount: bells 3 and 4 too).
Bell pads and wings	Factory-fitted mount bolts	Wrench to suit	Finger tight, then a quarter turn more, alternating side to side.
Foot to vehicle	4 × 1/2-13 bolts, 8 SAE flat washers, 4 nylock nuts (yours). No lock washers.	3/4 in wrench or socket, by hand	Finger tight, then a quarter turn more in a cross pattern. Stop there: the nylock holds without force. The plate must already be flat. A cracked foot from over-tightening is not covered by the warranty.
Air inlet	1/2 in NPT male fitting	Wrench to suit	Three wraps of PTFE tape on the male thread only. Hand tight, then one to one and a half turns. Never more.

Why nylock nuts. A nylock nut has a nylon ring that grips the thread, so it stays exactly where you leave it, even on a vibrating truck. That is why a rear cap never needs force: snug in the star order, then tune in 1/8 turns.

SECTION 4 • INSTALLATION

Before you install

The T5 arrives assembled and sound-tested. You supply the air system, the mounting plate and the hardware below.

Air system

- ☐ Compressor with a pressure switch and check valve
- ☐ Tank with a relief valve, pressure gauge and drain
- ☐ Pressure switch, set below the rating of every part
- ☐ Water separator
- ☐ Quarter-turn ball valve (shut-off)
- ☐ Horn valve: electric 1/2 in NPT, Cv 5.5 or more (or 3/4 in), or a full-port manual valve
- ☐ Air hose, 1/2 in **inside** or larger (not 1/2 in OD tube), and full-bore fittings
- ☐ 1/2 in NPT male fitting for the horn inlet
- ☐ PTFE thread tape

Electrical

- ☐ 12 V automotive relay, 30 or 40 A
- ☐ Inline fuses and holders
- ☐ Momentary push button
- ☐ Wire, terminals and a sealed connector for the valve

Mounting

- ☐ Flat steel plate, at least 4 × 4 in and 3/16 in thick, bolted to the frame
- ☐ Four 1/2-13 hex bolts, grade 5 or better, 1-3/4 in long for a 3/16 in plate
- ☐ Four 1/2 in **SAE** flat washers (1-1/16 in across) for the foot side, four 1/2 in flat washers for under the plate
- ☐ Four 1/2-13 **nylock nuts**. No lock washers (page 13)

Tools

- ☐ Drill, 9/16 in bit and a 1-1/4 in hole saw, for the plate only: never to drive a bolt on the horn
- ☐ Two 3/4 in wrenches or sockets, by hand
- ☐ 4 mm hex key and 8 mm wrench (rear caps)
- ☐ Soapy water in a spray bottle
- ☐ Hearing protection and safety glasses

Check the delivery

- 1** Unpack the horn on a clean surface. Lift it by the manifold, never by a bell.
- 2** Look over every part for cracks or shipping damage. Report damage within 3 days, with photos.
- 3** Keep the box and packing until the horn is installed and working.

SECTION 4 • INSTALLATION

Installation guidelines

Twelve rules that decide how good your horn sounds and how long it lasts. Most horns that sound weak or rasp break one of them.

- 1 Use a line at least 1/2 in inside.**
1/2 in OD tube is only 3/8 in inside and limits the whole system. Keep it short, with full-bore fittings, and mount the valve within 12 in (30 cm) of the inlet.
- 2 Feed it clean, dry air.**
Fit a water separator and drain the tank often. Water and rust on the diaphragm make it rasp and hiss.
- 3 Take the air from the top of the tank.**
Water collects at the bottom. A top or side outlet keeps it out of the horn.
- 4 Tape the male thread only.**
Three wraps of PTFE tape, starting one thread back from the end, so no tape can get inside.
- 5 Keep elbows and adapters to a minimum.**
Every sharp bend and small fitting costs air flow. Use a sweeping hose bend where you can.
- 6 Fit a shut-off valve before the horn valve.**
A quarter-turn ball valve lets you service the horn without draining the tank.
- 7 Blow out every new line before you connect it.**
Swarf and scale in a new line land on the diaphragm. Tap metal pipe while you blow it through.
- 8 Protect the line from freezing.**
In freezing weather drain the tank daily and insulate exposed lines. Ice can hold the valve open or shut.
- 9 Bolt the foot to steel, never to trim.**
A flat steel plate at least 4 × 4 in and 3/16 in thick, four 1/2-13 bolts, SAE flat washers and nylock nuts. Never lock washers.
- 10 Point the mouths forward, tipped down 5 to 10 degrees.**
Water then drains out of the bells instead of sitting on the diaphragms.
- 11 Keep it 12 in (30 cm) from heat.**
PETG softens at about 158 °F (70 °C): stay away from the exhaust, turbo and brakes.
- 12 Never tee into the air brakes.**
Use the horn's own compressor and tank, or an approved accessory port with a pressure-protection valve.

Putting it together. Step by step, in the order the air flows: page 11.

SECTION 4 • INSTALLATION

The air system

Put the system together in the order the air flows: compressor, tank, separator, shut-off, horn valve, horn. Sizes are minimums for a five-chime horn.

- 1 Compressor.** Mount it on the frame near the tank, out of road spray. Power it through its own relay and fuse, never straight from a switch.
- 2 Pressure switch.** Fit it on the tank and wire it to the compressor relay. It starts and stops the compressor. Choose a cut-out pressure below the rating of the lowest-rated part in your system.
- 3 Leader hose and check valve.** Braided leader hose from the compressor to a side port on the tank, with the check valve at the tank so air can't flow back into the compressor.
- 4 Tank.** 5 gal at least for a five-chime horn, 10 gal or more for long blasts. Fit a safety relief valve and a gauge in the top ports and a drain valve at the lowest point.
- 5 Take the air from the top.** Water collects at the bottom of the tank. Feed the horn from a port on top.
- 6 Water separator.** First thing after the tank outlet, with its drain at the bottom of the bowl. It keeps water and rust off the diaphragms.
- 7 Shut-off valve.** A quarter-turn, full-port ball valve after the separator, so you can work on the horn without draining the tank.
- 8 Main line.** 1/2 in inside-diameter hose at least (1/2 in OD DOT tube is only 3/8 in inside), 3/4 in is best, rated for your pressure. Full-bore fittings only: no push-to-connect, quick couplers or reducers (page 14).
- 9 Horn valve.** Electric: 1/2 in NPT with a Cv of 5.5 or more, or 3/4 in on a 3/4 in line. Manual: a full-port ball valve or a pull valve. Bolted to the frame within 12 in of the horn inlet, air direction as marked.
- 10 Horn inlet.** 1/2 in NPT male fitting into the centre of the foot, from below, through the 1-1/4 in hole in your plate. Three wraps of PTFE tape on the male thread only. Hand tight, then 1 to 1-1/2 turns. Never more.
- 11 Wiring.** Button to a relay, relay to the valve (page 15).
- 12 Before the first blast.** Blow every new line through before you connect it, soap-test every joint, then follow the first run (page 16).

Pressure. Every part from the compressor to the horn must be made for the pressure you run. The relief valve and the pressure switch must both be set below the rating of the lowest-rated part.

SECTION 4 • INSTALLATION

Choosing a location

Rules for any vehicle

- Bell mouths face forward, with nothing in front of them and nobody in line with them.
- Mount to the frame or another steel structure. Never to plastic trim, body panels or a bumper cover.
- Tip the bells down 5 to 10° so rain and condensation drain out (Fig. 8).
- Keep at least 12 in (30 cm) from the exhaust, turbo, brakes and anything hot.
- Keep the tank and the horn valve close to the horn, with short, straight lines.
- Leave room behind the caps to reach the cap screws with a hex key.

Where it goes

VEHICLE	BEST PLACE	WORKS, WITH CARE	AVOID
Semi tractor	On the frame behind the front bumper	Cab roof, ahead of the sleeper, on a backing plate	Behind the sleeper
Flatbed	On the frame behind the front bumper	Cab roof, reinforced	Under the deck behind the cab
Pickup, SUV, van	On the frame behind the front bumper	None	In the bed, or under the body

Line the bell mouths up with an opening in the bumper or grille. A solid plate in front of them blocks the sound.

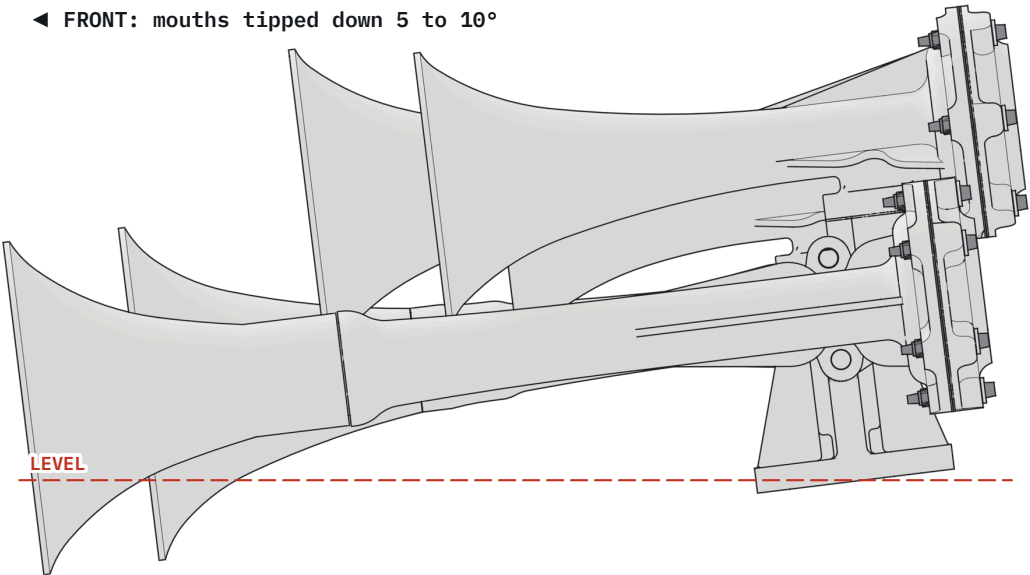


Fig. 8 Low mount from the side, tipped forward so water drains out of the bells.

SECTION 4 • INSTALLATION

Mounting the horn

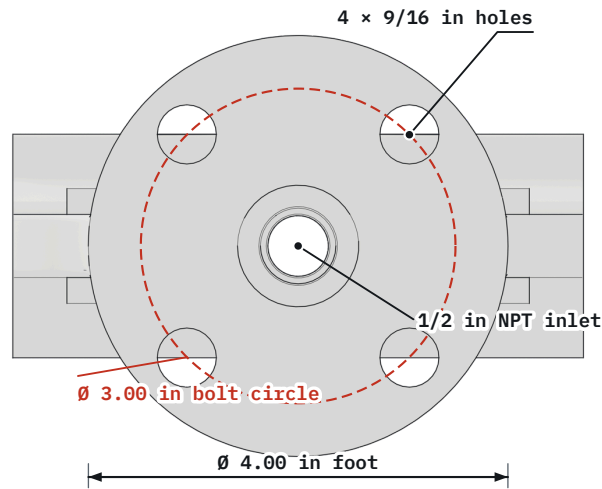


Fig. 9 The foot from underneath. Full-size drilling template on page 25.

- 1 **Plate.** Make or buy a flat steel plate at least 4 × 4 in and 3/16 in thick. Bolt it to the frame or a bracket on the frame.
- 2 **Template.** Print the template on page 25 at 100 % (check the 1 in square). Tape it to the plate, arrow to the front of the vehicle.
- 3 **Drill.** Four 9/16 in holes and a 1-1/4 in centre hole for the air fitting.
- 4 **Inlet fitting.** Three wraps of PTFE tape on the fitting's male thread. Screw it into the inlet by hand, then one to one and a half turns with a wrench. Tapered pipe thread splits plastic if forced.
- 5 **Set it down.** Stand the horn on the plate. It must sit flat. If it rocks, fix or shim the plate. Never pull the foot flat with the bolts.
- 6 **Bolt it.** Bolt head and SAE flat washer on the foot, flat washer and nylock nut under the plate. Run each nut on by hand until the washer just touches. Then a quarter turn more on each, in a cross pattern, by hand. Stop there.
- 7 **Support the valve.** Mount the valve on the vehicle, not on the horn. Nothing heavy should hang from the inlet.

4
INSTALL

Foot hardware (you supply it)

QTY	PART	WHERE AND WHY
4	Hex bolts, 1/2-13, grade 5 or better	1-3/4 in long for a 3/16 in plate; add your plate's extra thickness
4	Flat washers, 1/2 in SAE (1-1/16 in across)	Under the bolt heads, on the foot. No bigger: a wider washer hangs off the foot's edge
4	Flat washers, 1/2 in, any size	Under the plate, under the nuts
4	Nylock nuts, 1/2-13 (nylon insert)	Under the plate. They lock without force

CAUTION

The foot cracks if the bolts are cranked or the plate is not flat. Not covered by the warranty.

The foot is 1/2 in of printed plastic with only about 1/4 in of material outside each bolt hole. Finger tight plus a quarter turn is enough: the nylock nut is what keeps it from loosening, not force. A foot cracked by over-tightening is not covered and is replaced at your cost (T5-01 manifold).

Never use: split lock washers or star (tooth) washers; an impact gun, a drill-driver or a cheater bar; a rubber or foam pad under the foot; bolts pulled down onto a bent or uneven plate.

Check the bolts are still snug after the first day of use and monthly after that. Snug means they do not turn by hand: do not add another turn.

SECTION 4 • INSTALLATION

Air supply

A compressor fills a tank; the horn valve releases that air in one burst. How full the chord sounds depends on how much air can get from the tank to the horn in that instant. **The line and the fittings decide that far more than the valve does.**

The main line, tank to valve to horn

LINE	INSIDE	FOR THE T5
1/4 in OD nylon	1/8 in	Never for this horn: chokes it to almost nothing
3/8 in OD DOT tube	1/4 in	No. Fine for a gauge or a small kit horn, not a five-chime
1/2 in OD DOT tube	3/8 in	Minimum only. The usual kit line: it limits the whole system, whatever valve you fit
1/2 in ID hose	1/2 in	Good. About twice the flow of 1/2 in OD tube
3/4 in OD DOT tube or 3/4 in ID hose	5/8 to 3/4 in	Best. Only here does a 3/4 in valve pay off

DOT tube is sold by its outside size. 1/2 in OD tube is only about 3/8 in inside. Buy hose by its inside size.

What a system can deliver at 150 psi

VALVE AND LINE (6 FT TO THE VALVE, 12 IN TO THE HORN)	MOST AIR IT CAN PASS, SCFM
1/2 in valve (Cv 5.5) + 1/2 in OD DOT tube	about 75
1/2 in valve (Cv 5.5) + 1/2 in ID hose	about 125
3/4 in valve or 3/4 in full-port ball valve + 1/2 in ID hose	about 130
1/2 in valve (Cv 5.5) + 3/4 in line	about 230 to 260
3/4 in valve or 3/4 in full-port ball valve + 3/4 in line	about 250 to 320

Calculated from each part's flow coefficient (Cv) with the horn wide open: the ceiling the plumbing allows, not a measurement of the horn and not a pressure rating. A 3/4 in valve on a 1/2 in line gains almost nothing.

Fittings

- Full-bore fittings on the main line: brass NPT nipples, adapters and hose ends with an opening as big as the line inside.
- No push-to-connect fittings, quick couplers, needle valves or reducing bushings in the main line. One necked fitting undoes the line you paid for.
- Tape the male NPT threads only, three wraps, starting one thread back.

Tank and valve

- **Tank:** 5 gal at least, 10 gal or more for long blasts. From 150 down to 110 psi a 5 gal tank holds under 2 cu ft of usable air, a 10 gal about 3.6.
- **Electric valve:** 1/2 in NPT with a published Cv of 5.5 or more, or 3/4 in with a 3/4 in line.
- **Manual valve:** a full-port quarter-turn ball valve or a locomotive-style pull valve works too: you can feather the chord by hand.
- Valve within 12 in of the horn; tank as close to the valve as you can.

Thin sound? If the chord sounds thin or one bell lags, the cause is almost always the supply: a small line, a necked fitting or a far-away tank. Size up before you suspect the horn.

SECTION 4 • INSTALLATION

Valve and wiring

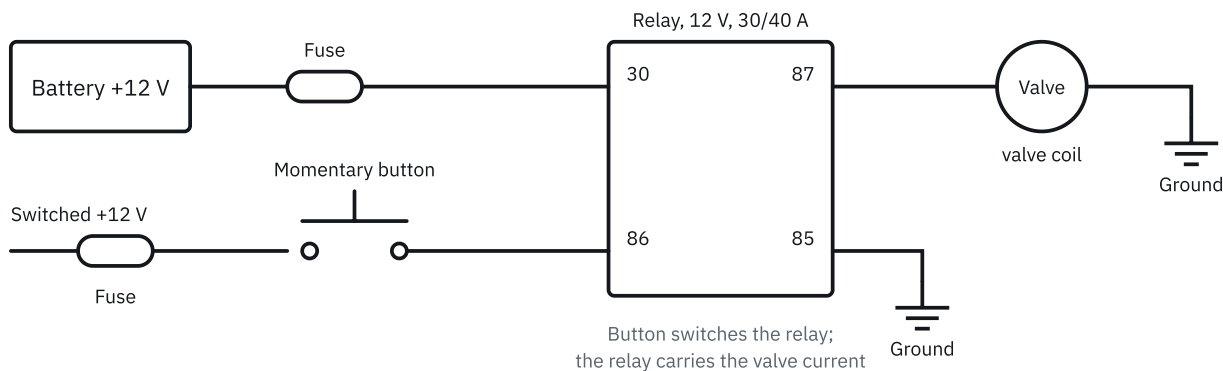


Fig. 10 The button switches the relay; the relay carries the valve current.

The valve

- Use a full-flow, quick-acting electric air valve: 1/2 in NPT with a Cv of 5.5 or more, or 3/4 in. Its job is to open fast, right at the horn.
- Mount it within 12 in (30 cm) of the horn inlet, on the frame, not on the horn.
- Follow the valve maker's figure for which way air goes. A coil facing up is common, so water drains away from it.
- Match port sizes. The lines into and out of the valve should not be smaller than the valve port.
- Keep the coil and its plug out of direct spray, and use a sealed connector.

Wiring

- 1 Disconnect the battery before you start.
- 2 Run a fused feed from the battery to relay pin 30. Size the fuse for the valve coil, using the valve maker's figure.
- 3 Connect relay pin 87 to the valve coil, and the coil's other side to a clean chassis ground.
- 4 Feed the button from a fused, switched +12 V source, and wire it to pin 86. Ground pin 85.
- 5 Route wires away from heat and moving parts. Seal every connection that sees weather.

SECTION 4 • INSTALLATION

First run

Bring the horn up to pressure in steps. Most problems show up at low pressure, where they are easy to fix.



WARNING
Wear hearing protection and safety glasses. Keep everyone clear.
Nobody stands in front of the bells or next to the fittings during these steps.

- 1

Check that every bolt is snug and every fitting is tight. Check the rear caps sit evenly all round.
- 2

Fill the tank to a low pressure only, for example 50 psi: watch the gauge and switch the compressor off there.
- 3

Spray soapy water on every fitting and joint. Bubbles mean a leak. Release the pressure and fix it before you go on.
- 4

Sound the horn with one short press, under one second.
- 5

Release the pressure. Look at the foot, the rear caps and every joint for cracks or white stress marks.
- 6

Let the compressor add 10 to 20 psi and repeat steps 3 to 5. Stop when you reach the pressure you plan to run, and never go above your lowest-rated part.
- 7

Write the pressure you settled on in the record on page 24.
- 8

After the first day of use, check the foot bolts and rear cap screws are still snug. Snug only: never add another turn to a bolt that has not moved.

4
INSTALL

Tuning by ear

WHAT YOU HEAR	LIKELY CAUSE	WHAT TO DO
One bell silent or weak	Rear stack too loose or too tight	Adjust that cap 1/8 turn (all six screws, star order) and try again
Buzz or rattle from one bell	Cap screws uneven	Back all six off a little and re-snug in the star order, stack held centred
Hiss from the cap vents	Diaphragm not sealing or torn	Rebuild that stack (page 19)
Squeal, no chord	Supply too small for five bells	Check the line, valve and tank sizes (page 14)

Each rear stack is tuned by how far its six screws are run in. Work on one bell at a time, in 1/8 turns, all six screws equally.

SECTION 5

Using and caring for the horn

Using it

- Use short blasts. Let the tank recover between them.
- Never sound it near people or animals, or in closed spaces.
- In freezing weather, drain the tank every day. Water in the lines and the valve can freeze.
- Know and follow the rules where you sound it.

Cleaning

- Wash with mild soap and water and dry it. Never use solvents, fuel, brake cleaner or acetone: they attack the plastic and the TPU seals.
- Keep the bell mouths clear of mud, insects and nests. Blow out dust with low-pressure air.

Heat and storage

- Keep the horn below 158 °F (70 °C). Store it out of direct sun and away from heat sources.
- If you remove it, store it standing on its foot with the rear caps fitted, so nothing gets into the bells.

Inspection schedule

WHEN	WHAT TO DO
Before each trip	Short test blast: listen for all five bells. Look for anything loose or cracked.
Every week	Drain the tank. More often in humid or freezing weather.
Every month	Check the foot bolts, mount bolts and cap screws are snug: never past snug, never re-tighten a bolt that has not moved. Check the long bells' joints are tight. Soap-test the fittings.
Every 6 months	Take one rear stack apart and look at the diaphragm, gaskets and nozzle seal. If one is worn, do all five.
Every year	Full inspection: every stack, every mount seal, the foot and the bracket. Replace worn soft parts.
After any knock	Inspect the whole horn before using it again.

Soft parts wear. Diaphragms and gaskets are wear parts, like brake pads. If one bell starts to rasp, hiss or go quiet, rebuild that stack. Spares are listed on page 23.

SECTION 6 • MAINTENANCE

How the rear stack works

Behind each rear cap is a stack of five parts. Air from the manifold fills the chamber around the nozzle and pushes the diaphragm off the nozzle seal; air rushes down the bell, the diaphragm snaps back, and it repeats hundreds of times a second. That is the note. The bell's length sets the pitch.

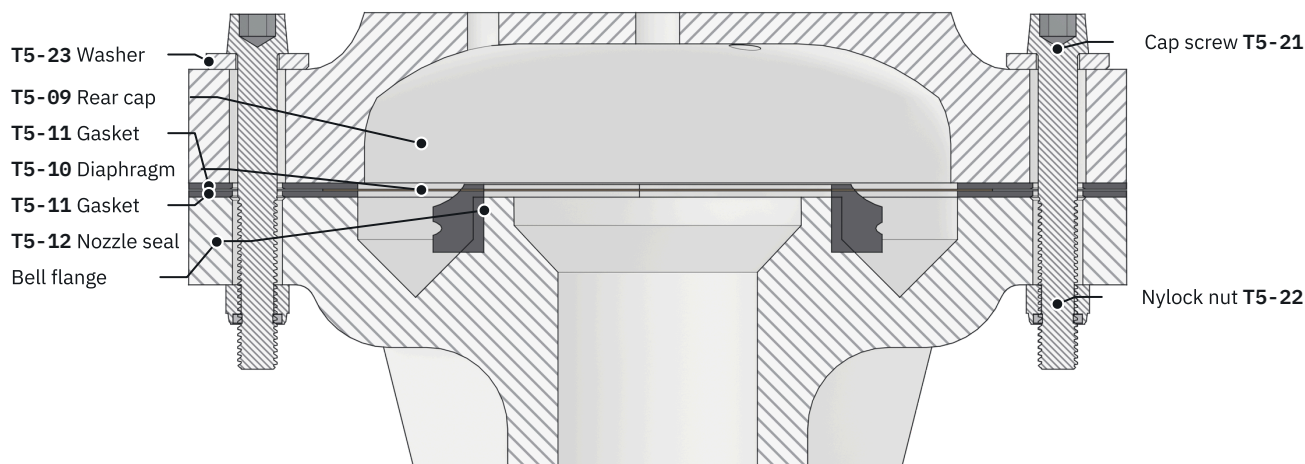


Fig. 11 Bell 5's rear stack cut through its centre and through two cap screws. Hatched: printed PETG. Black: TPU. Tan: the diaphragm.

Why it barks

The nozzle seal stands a hair proud of the bell face. Tightening the cap squeezes the stack and presses the diaphragm onto it. That preload is what gives the T5 its bark: no spring needed. How far the six screws are run in is the tuning knob.

What each part does

- **Gaskets** seal the small gap the proud nozzle seal leaves, one each side of the diaphragm.
- **Rear cap** clamps the stack. Its vent holes let the back of the diaphragm breathe: never block them.
- **Nylock nuts** hold the setting on a vibrating vehicle.

SECTION 6 • MAINTENANCE

Servicing a rear stack

Do this when a bell goes quiet, rasps, or hisses from its cap vents, or on the yearly inspection. Allow about 20 minutes per bell. You need a 4 mm hex key, an 8 mm wrench, a pencil and a **T5-15** rebuild kit plus a **T5-10** diaphragm.

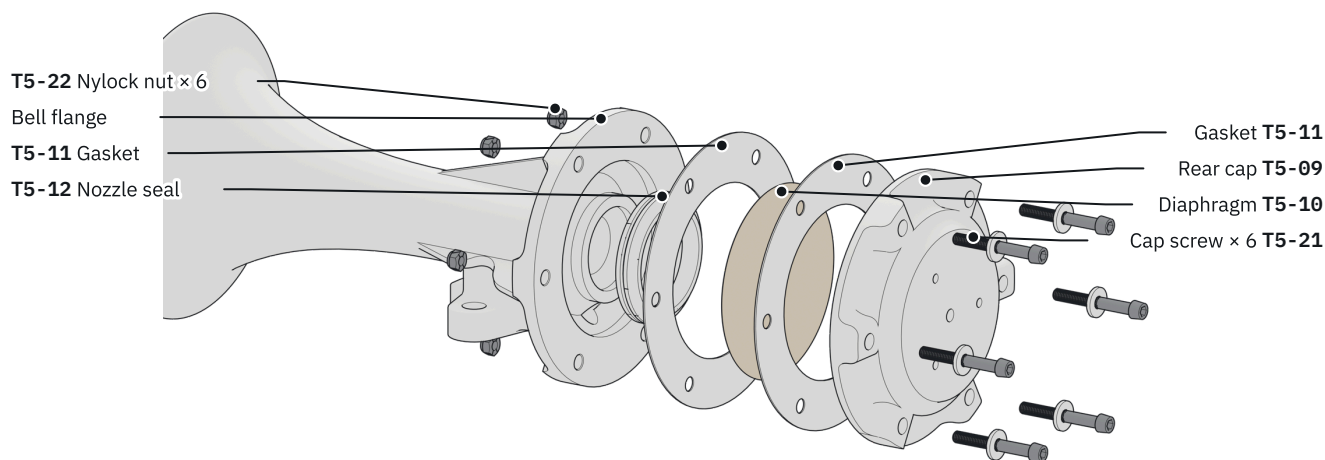


Fig. 12 The rear stack in order, from the bell outward. Every bell is built the same way, except one reversed screw on bells 1 and 2 (step 12).

Take it apart

- 1 **Release the air** and disconnect the valve's power.
- 2 **Take the bell off the horn.** With the bell on the horn, some nylock nuts are boxed in by the next bell. Undo the bell's two mount bolts and lift it off with its mount seal (page 21).
- 3 **Stand it on its mouth** on a clean towel, cap up. Draw a pencil line across the cap and the bell flange so the cap goes back the same way.
- 4 **Undo the six cap screws** a little at a time, in the star order. Hold each nylock with the 8 mm wrench while you turn the screw with the hex key.
- 5 **Lift off the cap** and lift out the top gasket, the diaphragm and the bottom gasket, in that order. Keep them in order on the towel.
- 6 **Inspect.** Diaphragm: flat, clean, no creases or cracks. Gaskets: no tears, not flattened shiny. Nozzle seal: seated all the way down, round, not torn. Replace anything doubtful.

SECTION 6 • MAINTENANCE

Rebuilding the stack

- 7 Clean the faces.** Wipe the bell face, the nozzle seal and the cap with a clean, dry cloth. Dirt here is the main cause of rasp and hiss.
- 8 Bottom gasket.** Lay one **T5-11** gasket on the bell face, its six holes over the bell's holes.
- 9 Diaphragm.** Centre the **T5-10** diaphragm on the gasket. Handle it by the edge: no fingerprints, no creases.
- 10 Top gasket.** Lay the second gasket on top, holes lined up.
- 11 Cap.** Fit the cap with its vents facing out and your pencil marks lined up. Hold the whole stack centred with one hand.
- 12 Screws and nuts.** Put a **T5-23** washer on each lug and push the six screws through from the cap side. Start each nylock on the flange face by hand, nylon ring facing away from the flange, until it just touches. Bells 1 and 2: the screw next to the wing goes in from the back, head under the flange, washer and nylock on the cap. Build those two stacks before the bell goes on the wing (high mount: bells 3 and 4 too).
- 13 Snug it in the star order.** Turn each screw a little at a time, 1 to 6 as in Fig. 13, two rounds, still holding the stack centred. Stop at snug: the gaskets squeeze evenly and do not bulge.
- 14 Refit and test.** Refit the bell with its mount seal (page 21). Test at low pressure and tune in 1/8 turns.

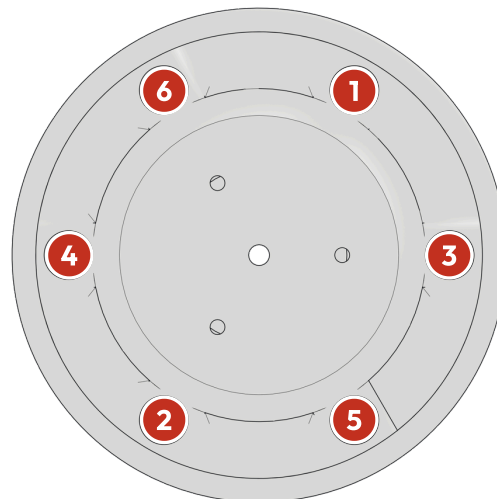


Fig. 13 The cap from behind: tighten in this order, a little at a time.

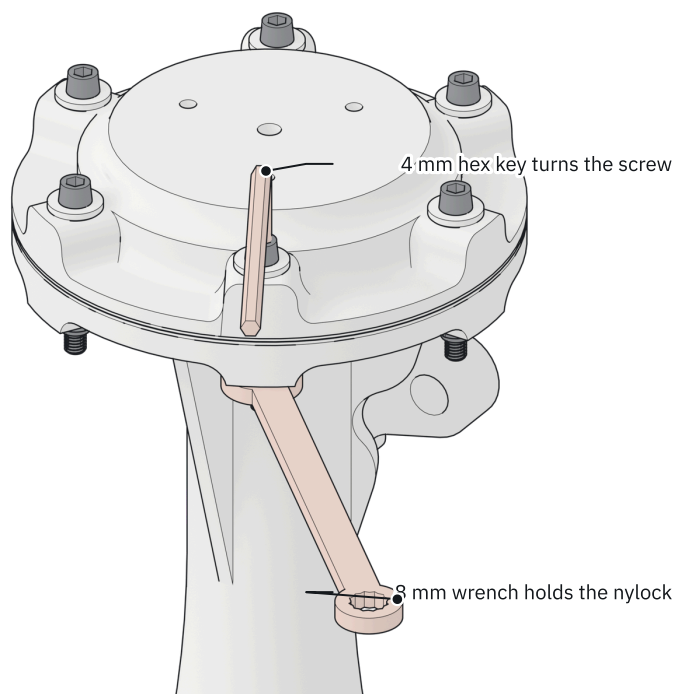


Fig. 14 Turn the screw from the cap side; hold the nut.

⚠ CAUTION

Hand tools only, and never past snug.

No drill-driver, no impact wrench. A cranked cap distorts the stack (rasp, hiss) and can crack the cap's lugs. If a bell will not seal at snug, a part is worn: replace it.

SECTION 6 • MAINTENANCE

Bells and mount seals

Each bell sits on a port with a 2 mm TPU mount seal between them and two bolts through its pad. Take a bell off to rebuild its rear stack, or to replace its mount seal if a joint leaks.

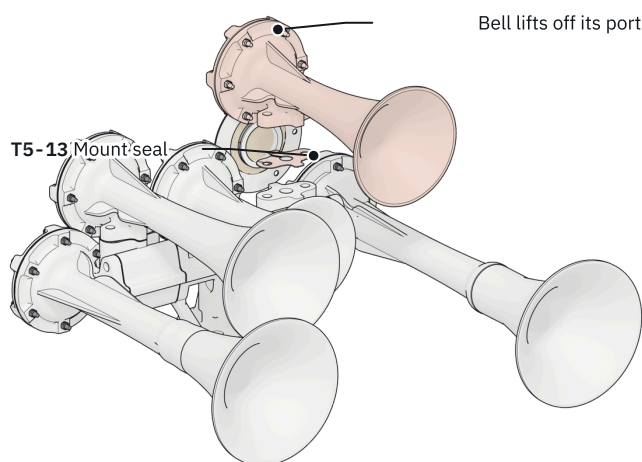


Fig. 15 Bell 3 lifted off the right wing.

Take a bell off

- 1 Release the air and disconnect the valve's power.
- 2 Support the bell. Undo its two pad bolts and lift the bell straight off its port.
- 3 Keep the mount seal. Replace it if it is torn, flattened or no longer springs back.

The long bells

Bells 1 and 2 are printed in two sections: the flare section screws onto the rear section by hand, on a hidden thread. It should close with no gap all the way round. If it will not close, clean the thread and try again; never force it. If it works loose: a strip of thin plastic or PTFE tape on the thread, or a little E6000 for good. Never metal threadlocker: it can crack PETG.

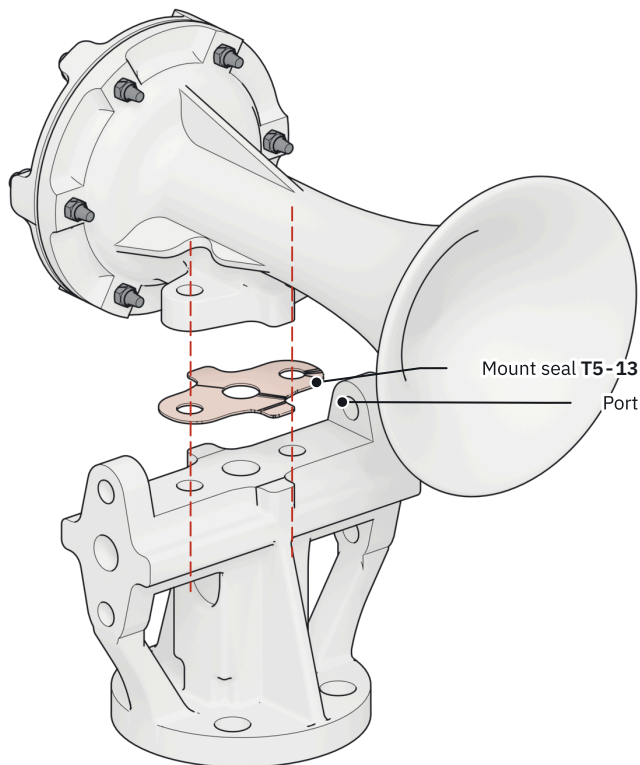


Fig. 16 Bell 5 on the manifold: seal between pad and port, two bolts.

Put it back

- 1 Lay the mount seal on the port, its holes over the port's holes. The air hole in the middle must be clear.
- 2 Set the bell on the seal pointing straight forward, in line with the others.
- 3 Fit the two bolts finger tight, then a quarter turn more, alternating side to side. Hand tools only.
- 4 Test at low pressure and soap-test the joint.

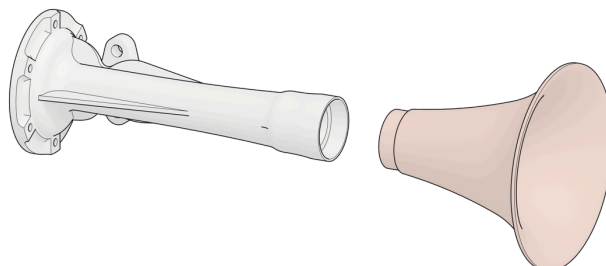


Fig. 17 Bell 1: the flare section screws on.

SECTION 7

Troubleshooting by sound

Always release the air and disconnect the valve's power before you work on the horn. Find the bell with the problem by listening close, with hearing protection on.

WHAT YOU HEAR OR SEE	LIKELY CAUSE	WHAT TO DO
No sound from any bell	Air is not reaching the horn: valve not opening, blown fuse, closed shut-off valve, empty tank or a blocked line.	Check the fuse and that the valve clicks. Check the tank gauge and the shut-off valve. Disconnect the line at the horn and blow it through.
One bell silent	That bell's diaphragm is torn or stuck, the nozzle seal is not seated, or its mount seal is blocking the port.	Service that bell's rear stack (page 19). Check the mount seal holes line up with the port.
Raspy or distorted sound	Dirt on the diaphragm or nozzle seal, a creased or warped diaphragm, or a rear cap tightened unevenly.	Take the stack apart, clean it, replace a creased diaphragm, refit in the star order.
Hiss from the cap vents	The diaphragm is torn or off-centre, or a gasket has moved.	Rebuild that stack. Hold it centred while you tighten.
Hiss or bubbles at a joint	A mount seal is damaged or out of place, or the mount bolts have settled.	Release the air. Replace or re-seat the seal, then finger tight plus a quarter turn.
Buzz or rattle	Loose cap screws, loose mount bolts, or the foot not sitting flat.	Check every fastener. Never crank them: snug is enough.
Won't stop sounding	The valve is stuck open or the wiring holds it on.	Shut the ball valve. Check the button, relay and valve before using it again.
Smoother or less raspy than it should be	The caps are clamped harder than before (more squeeze on the diaphragm), or the air pressure is low.	Test at full pressure first. Then back every cap screw off 1/8 turn in the star order and try again. Mark the setting you like on the heads.
A long bell works loose at its joint	Vibration backs off the printed thread between its two sections.	Screw it tight, faces touching, with a strip of thin plastic or PTFE tape on the thread. For good, a little E6000 on the thread. Never use metal threadlocker (blue or red): it won't cure on PETG and can crack it.
Chord sounds different	One bell is not sounding, a diaphragm is stretched or creased, or a cap's tension has changed.	Find the bell with the problem by listening close (with ear protection). Rebuild or re-tune that bell in 1/8 turns.
Weak sound from every bell	Not enough air flow: line too small, small fittings, pressure switch set low, or leaks.	Use the sizes on page 14. Remove adapters. Check the pressure switch setting. Soap-test every joint.
A crack anywhere	Over-tightening, a lock washer, an impact gun, a knock, heat, or a foot pulled down onto an uneven plate.	Stop using the horn. Release the air and replace the part before using it again. Cracks from over-tightening or misuse are not covered: the part is bought new.

Still stuck? Send us a short video of the sound and photos of the horn: contact details on page 23.

SECTION 8

Parts, warranty and support

Spare parts

PART NO.	PART	SPEC	QTY
T5-01	Manifold	PETG, printed solid	1
T5-02	Wing, right	PETG, printed solid	1
T5-03	Wing, left	PETG, printed solid	1
T5-04	Bell 1	PETG, two sections	1
T5-05	Bell 2	PETG, two sections	1
T5-06	Bell 3	PETG	1
T5-07	Bell 4	PETG	1
T5-08	Bell 5	PETG	1
T5-09	Rear cap	PETG	5
T5-10	Diaphragm	Ø 85 × 0.2 mm, tan	5
T5-11	Rear gasket	TPU, 0.8 mm	10
T5-12	Nozzle seal	TPU	5
T5-13	Mount seal	TPU, 2 mm	7
T5-21	Cap screw	M5 × 0.8 × 40 mm, socket head, black	30
T5-22	Lock nut	M5 × 0.8, nylon insert, black	30
T5-23	Cap screw washer	PETG, 13 × 5.5 × 2 mm, printed solid	30
T5-14	Rear cap hardware set	6 × T5-21 cap screws, 6 × T5-23 washers and 6 × T5-22 lock nuts: one rear cap	kit
T5-15	Chamber rebuild kit	2 × T5-11 gaskets and 1 × T5-12 nozzle seal: one bell (diaphragm sold separately)	kit
T5-16	Gasket pair	2 × T5-11: one bell	kit

Support



Manual, videos and parts
unordinarydepot.com

Email
sales@unordinarydepot.com

Warranty

If a part has a defect in materials or workmanship, tell The Unordinary Depot within 90 days of delivery, with photos. It will be repaired, replaced or refunded.

Not covered: cracks from over-tightening, lock washers or power tools; a foot pulled down onto an uneven plate; drops and knocks; heat; excess pressure; misuse or modification; and normal wear of soft parts such as gaskets, seals and diaphragms. A part damaged this way is bought new from the parts list.

The full Terms of Sale are on the website.

Videos

Short videos show the rear stack going together and the horn being built: on the manual page of the website.

The T5 grew out of the Open Tone Convertible air horn by dlatch13 (GPL v3). The Unordinary Depot redesigned, reinforced and tested it for the road.

SECTION 8

Build and test record

Filled in at The Unordinary Depot when your horn is built and sound-tested. Keep it: it is the starting point if a bell ever needs re-tuning.

Serial no. _____

Mount ☐ Low ☐ High

Built by _____

Test pressure used (psi) _____

Date _____

Leak test, every joint ☐ Passed

BELL	LENGTH	REFERENCE PITCH	MEASURED HZ	SOUNDS CLEAN	TUNING NOTES
Bell 1	16.25 in	about 445 Hz (A4)		☐	
Bell 2	18.59 in	about 375 Hz (F#4)		☐	
Bell 3	11.00 in	about 660 Hz (E5)		☐	
Bell 4	13.50 in	about 518 Hz (C5)		☐	
Bell 5	8.53 in	about 800 Hz (G5)		☐	

Notes _____

Installed by / date _____

Settled operating pressure (psi) _____

Reference pitch is what a correctly tuned T5 measured with a phone tuner at moderate pressure. It moves a few hertz with pressure, temperature and stack tuning. Pitch is set by the bell length; a bell far off its reference usually has a stack problem.

DRILLING TEMPLATE

Mounting plate template, actual size

Print this page at **100 %**, or "actual size", never "fit to page". Measure the check square: it must be exactly 1 in. Centre-punch each cross, drill the four 9/16 in holes and the 1-1/4 in centre hole.

