

Installation instructions & maintenance

MARTIN-HORN®
... das Original!

MARTIN HORN® 2097 GM and 2298 GM

For fire engines / emergency vehicles / special-purpose vehicles

(Acoustic alarm system in accordance with DIN 14610 EG)



DEUTSCHE SIGNAL-INSTRUMENTEN-FABRIK
Max B. Martin GmbH & Co. KG



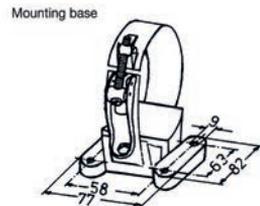
INSTALLATION AND MAINTENANCE INSTRUCTIONS

1. Description

- 1.1 **Electric blower:** A series-wound DC motor with a centrifugal blower produces the air for the acoustic horn. For the type 2097 GM, the power consumption is around 120 watts, for the type 2298 GM it is around 240 watts.
- 1.2 **Valve and switch mechanism** (installed on blower): The motor speed is decreased many times over by a transmission so that the valve can emit two tone sequences in around 3 seconds. The valve regulates the air into the respective acoustic horns in the rhythm of the signal whilst a shift cylinder with a micro switch automatically interrupts the electricity after a signal duration of 3 seconds (see circuit diagram Fig. 2).
- 1.3 **Diaphragm acoustic horn:** Two diaphragm acoustic horns are included in MARTIN-HORN® 2097 GM, four diaphragm acoustic horns are included in MARTIN-HORN® 2298 GM. In the 2298 GM model, two of the acoustic horns always sound at the same time. They emit a quavering sound. The sound is produced by pneumatic diaphragms.

2. Installation

- 2.11 Attach the **electric blower** in a protected spot (protected from spray). The oiler must not face downwards.
- 2.12 Open the mounting base strap. Remove the blower. Bolt the base to the desired spot. The reinforcement plate can be used as a drilling template.
- 2.13 Place the blower back into the mount. Close the fastening clasp.
- 2.21 **Attach the diaphragm acoustic horns** so that they cannot be damaged by spray, i.e. water can run off. The diaphragm acoustic horns should be attached with an angle of inclination of 8°. They should be arranged so that no other parts are located directly in front of the diaphragm acoustic horns. The warning capacity must not be significantly impaired by installation (legal regulation or stipulation in DIN 14610 EG).
- 2.22 Do not mix up the diaphragm acoustic horns of different MARTIN horns! They are matched to each other in sets and have the same end number on the membrane housing as is shown on the relevant electric blower (see rating plate).
- 2.31 **Connection hoses** Smallest bend radius: 25 mm.
Maximum hose length: 10 m. Ø outer: 13 mm. Ø inner: 9 mm.
- 2.32 Hose fittings: Retaining screws and/or union nuts with hose grommets, for 2298 GM there are also 2 manifolds. Available as an option: Y-manifold made of plastic, article no. 2567.04K, elbow connection article no. 2568.14

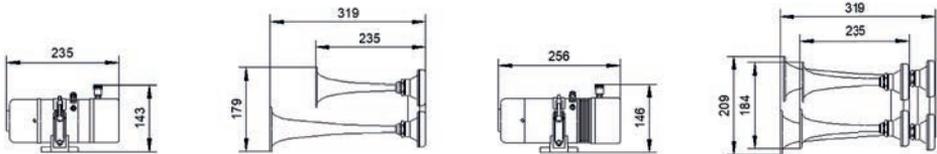


- 2.33 Unscrew or pull out the plugs from the threaded holes (M14 x 1.4 mm) on the electric blower and from the threaded sleeves R ¼" on the diaphragm housing and screw on the hoses with the retaining screws (union nuts). No foreign bodies may fall into the sleeves, threaded holes or tubes here.
- 2.34 Connect the hoses as follows: the diaphragm acoustic horn a' (both a' for 2298GM) with hole a on the electric blower, connect the diaphragm acoustic horn d" (both d" for 2298GM) with the d hole.
- 2.35 Only for 2298 GM: The manifolds consist of copper tubing that can be bent by hand to push them closer together or further apart.

3. Dimensional installation drawings

MARTIN-HORN® 2097 GM

for MARTIN-HORN® 2298 GM



If snow caps are used, the overall length of the diaphragm acoustic horns is increased by 30 mm.

4. Electrical connection

- 4.11 **Circuit diagram – horn push-button switches minus** – diagram overleaf
- 4.12 **Circuit diagram – horn push-button switches positive** – diagram overleaf
- 4.2 If the MARTIN-HORN® is to be connected independently of the beacons, the alarm switch in circuit diagram 4.11 is no longer needed and terminal 86 in the relay is connected with the ground of the vehicle via a single-pole circuit breaker.

4.31 Current consumption, fuses and cable cross-sections

Operating voltage	For MARTIN-HORN® 2097 GM		For MARTIN-HORN® 2298 GM	
	Fuse	to be provided As cable cross-section	Fuse	to be provided As cable cross-section
12 volts	15 A	4.0 mm ²	25 A	6 mm ²
24 volts	8 A	2.5 mm ²	15 A	4 mm ²

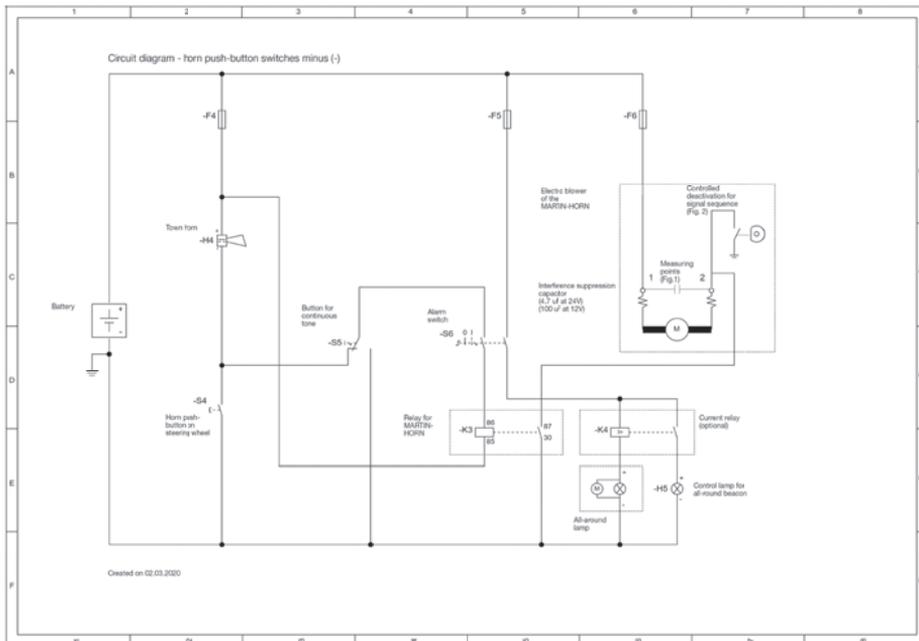
- 4.32 The cables should be as short as possible. All cables between the battery and the MARTIN-HORN® must have the nominal minimum cross-section. If an individual cable is more than 2 m long, the next level of cross-sections (next largest) should be applied.

- 4.4 The operating voltage should amount to at least 90 % of the battery voltage. It must be checked between measuring points 1 and 2 when the MARTIN-HORN® is running (see circuit diagram in Fig. 1). Larger power losses must be prevented as otherwise the MARTIN-HORN® will not be able to produce sound at full volume.

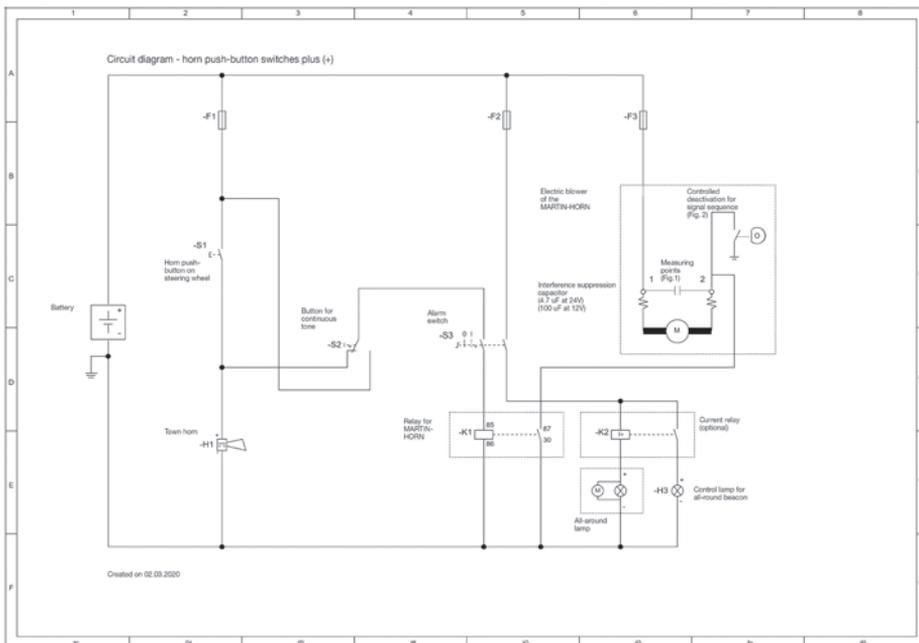
5. Maintenance

- 5.1 Oil the **blower unit**. Every 6 – 8 weeks (depending on frequency of use), fill the wick oiler with special MARTIN oil. Every MARTIN-HORN® comes with a small can of special oil. It can also be reordered at any time. Never use a normal machine or engine oil!
- 5.2 **Dust filters** must be cleaned from time to time.
- 5.3 **Snow caps** (available as an option). Optimal for winter operation (do not jam when exposed to snow or ice). Dust filters can be replaced with snow caps.
- 5.4 **Replacement diaphragm acoustic horns** for MARTIN-HORNS are only supplied in sets. If you only need to replace one diaphragm acoustic horn, send the remaining horns to us. The missing parts will then be retrofitted, and you will receive a complete set of perfectly harmonized diaphragm acoustic horns. This is the only way to be certain that your MARTIN-HORN® will emit a perfect sound that is of sufficient loudness and that the test conditions in accordance with DIN 14610 EG are fulfilled.
- 5.5 **No further maintenance** is required thanks to the constantly improved high quality of all parts (corrosion protection provided by galvanic processing, rounded polishing of the shaft running surfaces, etc.). If the MARTIN-HORN® should malfunction due to an accident or for any other reason, please send it in for testing and repair immediately. If repairs are carried out by third parties, this may mean that any potential guarantee claims cannot be accepted.

Circuit diagram (-) for 2097 GM and 2298 GM



Circuit diagram (+) for 2097 GM and 2298 GM



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