



<Bako>

Bass accordions are quite rare instruments. You will encounter them only as a part of larger accordion orchestras, a dying out species in itself. As far as I know, there was never a piece written for bass accordion solo... We came up with the idea for such an instrument as a request from the many robot orchestra users and composers for a reasonably small but still strong sounding and very low pitched instrument. According to the laws of acoustics, this seems like mission impossible... if there weren't free vibrating reeds. Hence our call upon the bass accordion. The practical design of this musical robot started with a second hand Hohner bass accordion we purchased from Hans Kuik. First of all, we restored and retuned the whole instrument. The instrument has 34 notes, each note with the usual couple of reeds: one set for suction, one for blowing wind. So, in total we have 68 reeds inside the instrument. Other than in the case of [<Ake>](#), our automated 'normal' accordion, here we decided to keep the original bellows and to automate them, rather than using an electric blower connected to a difficult to make and to control 4-way valve. For pressure regulation and control, we made use of an integrated bipolar pressure sensor by Freescale Electronics (type MPXV7002DP) . The measured pressure is compared with the soll-value as set with midi controller 7 and the motor controlled accordingly, correcting for any differences in absolute pressure. Note that for accordions, wind pressure is -within limits- proportional to sound volume, so the mapping on midi controller 7 seems appropriate. The motor control makes use of a brush DC servo amplifier module by Advanced Motion Controls (type 12A8). All power supplies were designed using hefty analog circuitry thus avoiding switch mode power supplies with their inherent leakage currents, short life time, spurious noises and oscillation problems when confronted with fast switching heavy inductive loads.

Another important difference with the [<Ake>](#) design is that in this case we removed all human playing interfaces (keyboard) completely and decided to activate the pallets directly with pull-type solenoids. This mainly to avoid the annoying mechanical noises produced when using push type solenoids for playing the 'human' keys. These points of departure in the design made a pure vertical construction (with horizontal pallets and vertically moving bellows) obvious. This way we could use gravity alone to keep the pallets closed at rest. As a consequence, a precise horizontal placement of this robot became mandatory.

The constructional parts for this robot are all made from stainless steel, as can be seen on the picture.