<Simba>

This robot was build in response to repeated questions and requests we had from many of our collaborating composers working and writing for the Logos robot orchestra, for automated cymbals with extended musical playing possibilities. Only our <Troms> robot sofar had a small cymbal with only a single beater. Its musical weigth was judged to light in the context of the ever growing and pretty symphonic robot orchestra. In this newly designed robot we wanted to implement both the suspended (stand-mount) cymbals, as the hi-hat, where the sound comes from the concussion of two cymbals. Both elements can be played with many different sticks, hitting the cymbals on different spots. The hi-hat can also be played with the cymbals closed. Since the upper cymbal is not moving, the striking distance for the solenoids remains constant, which is essential for the realisation of predictable velocity scalings in such an instrument. As to the suspended cymbals, instead of mounting them horizontaly as usual amongst percussionists, we went for a vertical placement, since that facilitated the mounting of the different striking mechanisms. Also, it made it possible to provide in a good working damping mechanism for each individual cymbal. We did a lot of research into this one, and finally came up with the design implemented here whereby the cymbals are damped with a piece of felt covered neoprene touching the cymbal on the edge over about 1/6th of the diameter of the cymbal. Also these cymbals can be struck whilst damped, thus allowing for a typical dry sound effect.
Some extra features added to this robot are: A small but heavy cast bronze bell cymbal (made by Ufip and sold as 'ice bell') with a single beater. A couple of bass castanets (large wooden clappers, sounding a bit like loud coconuts), driven by strong push type solenoids; a bell-rim tambourine without drumskin driven by a pull-type solenoid. As yet under consideration are a motor driven rainmaker (rainstick), motor driven musical tubes, tubular shakers, a reco reco, a cavity resonator tube...
Some visual features have been added as well: a variety of lights, mapped on midi notes. Four lites are mounted on the front, three on the back.
The entire chassis construction was made from stainless steel AISI304L. The parts were welded together using the manual TIG process. The chassis main frame was bend from a piece of stainless steel 2400mm x 100mm x 10mm and provides more than enough structural strength to withstand abuse in transportation and heavy use. The <Simba> robot has three sturdy wheels: two 400mm diameter frontal wheels and a 200mm steering wheel on the back. The horizontal movement is equiped with ball bearings.