

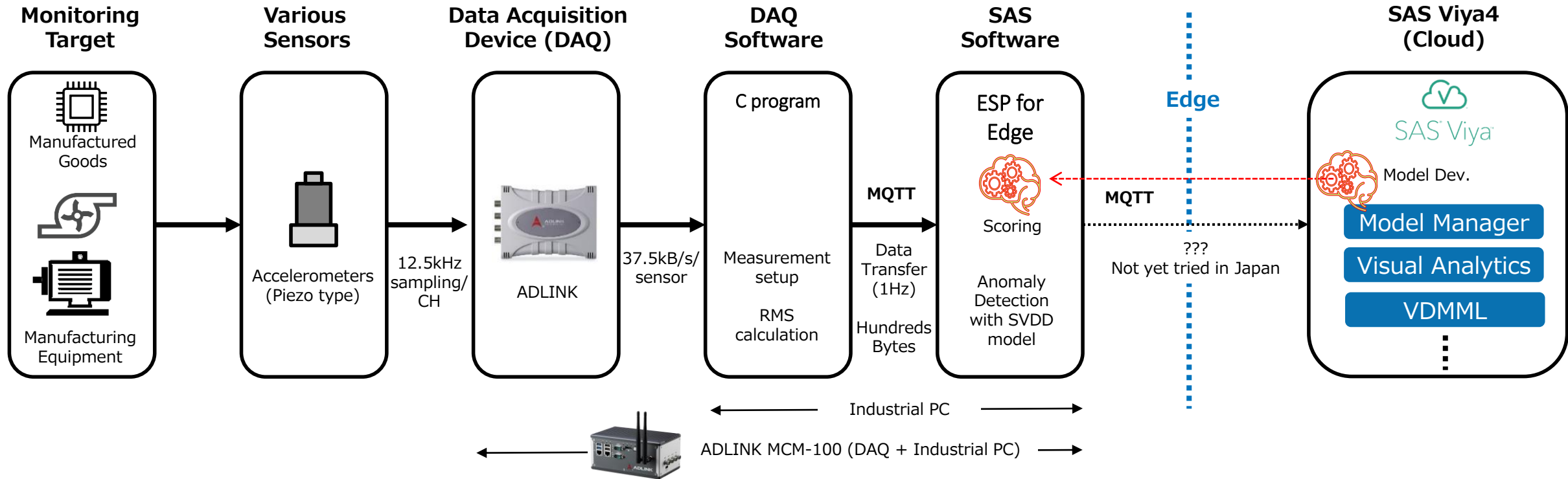


# How to make a fan failure simulator

Sr. Industry Consultant for IoT, Japan  
Kazunari Okada

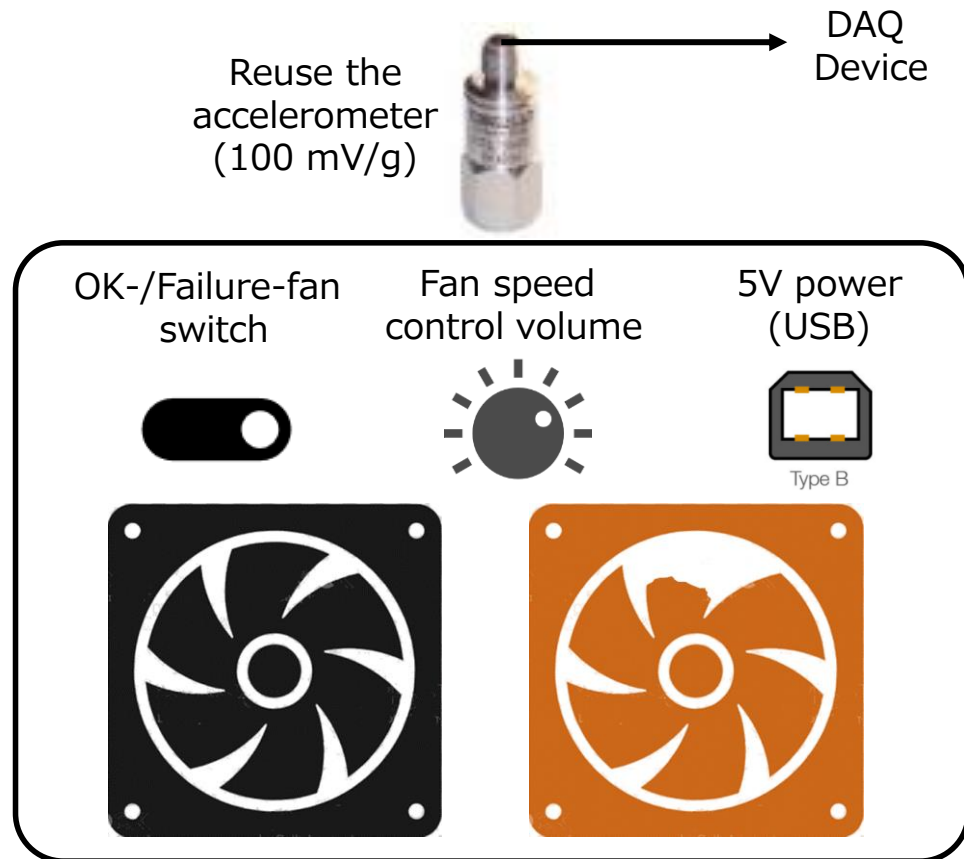


# System Diagram



# Concept of Failure Simulator

Enables to switch normal fan and failure one, and to change fan speed

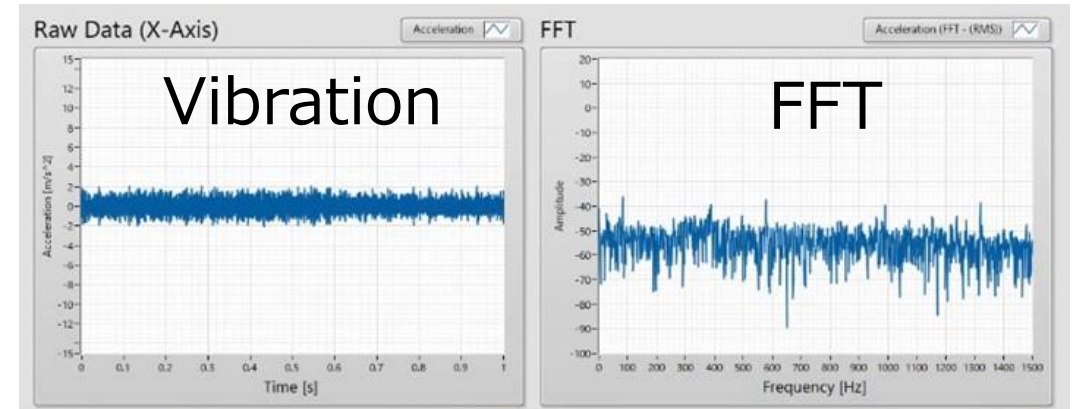


Normal

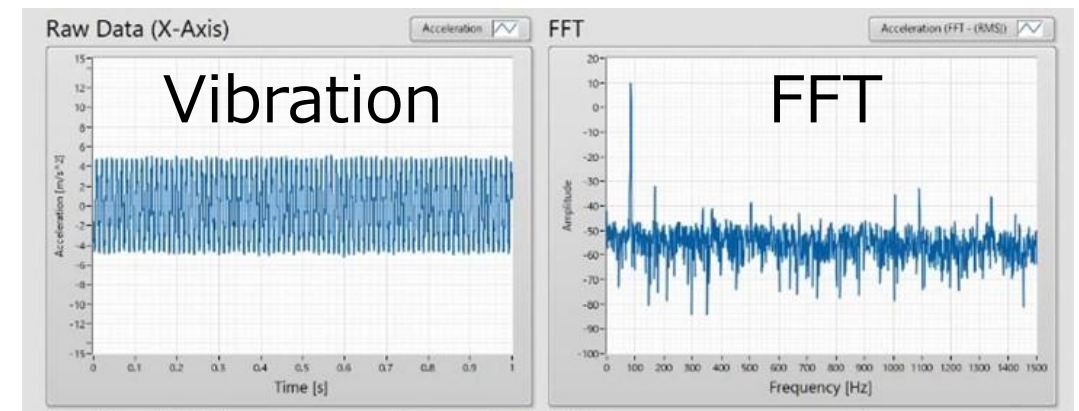
Failure

1kg, \$60?

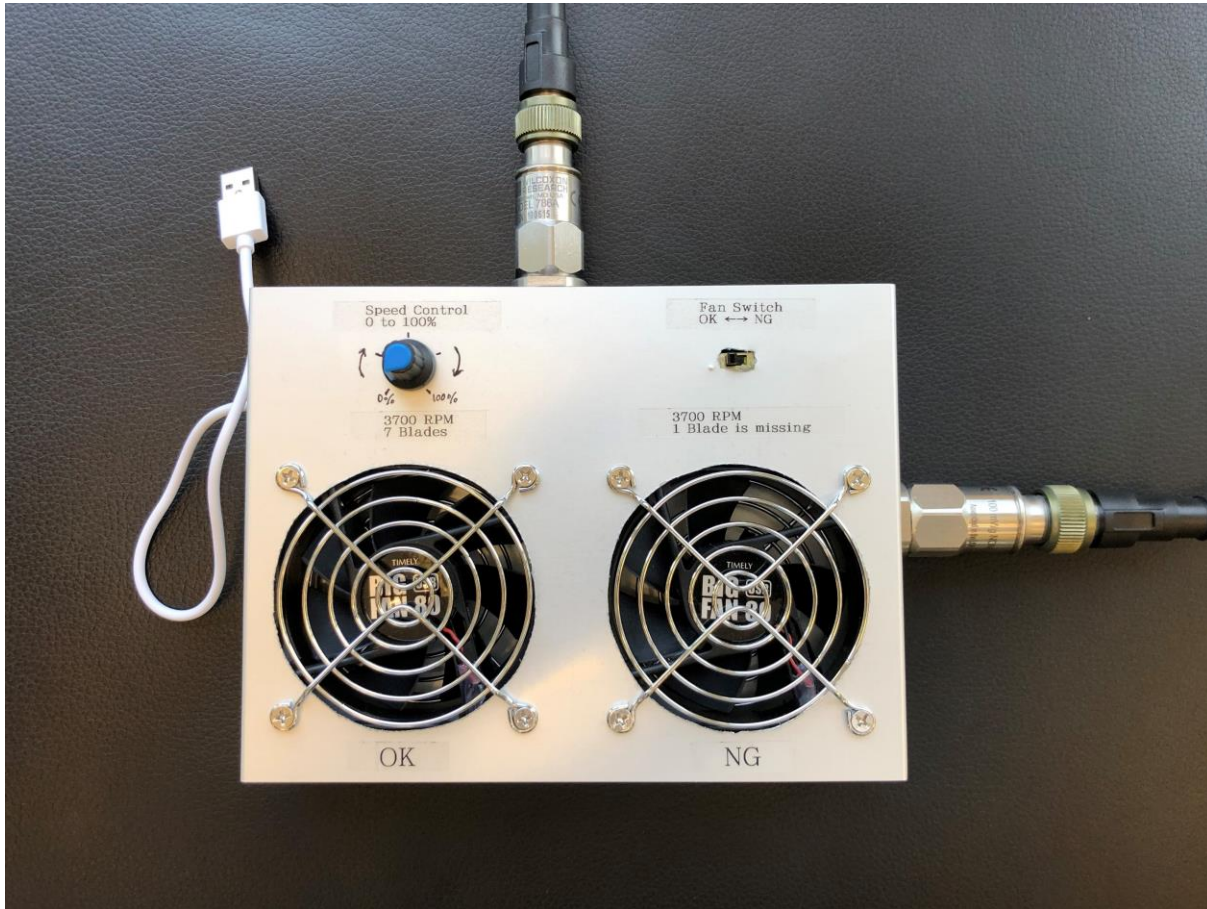
## Normal Condition



## Failure Condition



# Prototype



## Component List

- Two fans
- Fan speed controller
- Switch to change a fan
- 5V power source (USB)
- Piezo-type accelerometer
- Cable (2pin to BNC, 2m)
- Mounters for accelerometers
- Epoxy adhesive
- Aluminum box
- (ADLINK USB-2405)

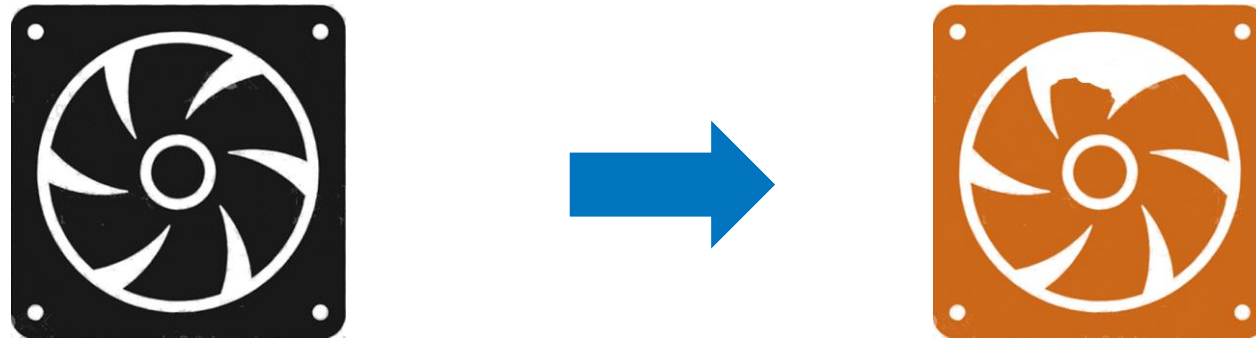
# Parts list of fan failure simulator



Parts	Detail	Cost
<a href="#">Two fans</a>	TIMELY Twin USB Fan BIGFAN80U for Men Stereo BIGFAN80U-STEREO (80 mm size)	\$12
<a href="#">Fan speed controller</a>	Treedix USB fan speed controller, DC 5V input (2 sets)	\$4/controller
Switch to change a fan	SPDT slide switch	\$1
USB cable (Type-A to micro)	Longer than 2m is better	\$2
<a href="#">Piezo-type accelerometer (100 mV/g)</a>	Wilcoxon 786A (100 mV/g) Reused the accelerometers that were attached with the old pump demo. One accelerometer is fine.	\$550
<a href="#">Mounters for accelerometers</a>	Wilcoxon SF8 Cementing pad, 1/4-28 integral stud, 1" diameter, 21.5 g	\$12
<a href="#">Epoxy adhesive</a>		\$20
<a href="#">Aluminum box</a>	Takachi YM-200, 200x40x150 (mm)	\$13
<a href="#">ADLINK USB-2405</a>	Reused the ADLINK USB-2405 that were used with the old pump demo. 4CH, 24 bit 128kS/s, USB 2.0 DAQ Module	\$3400

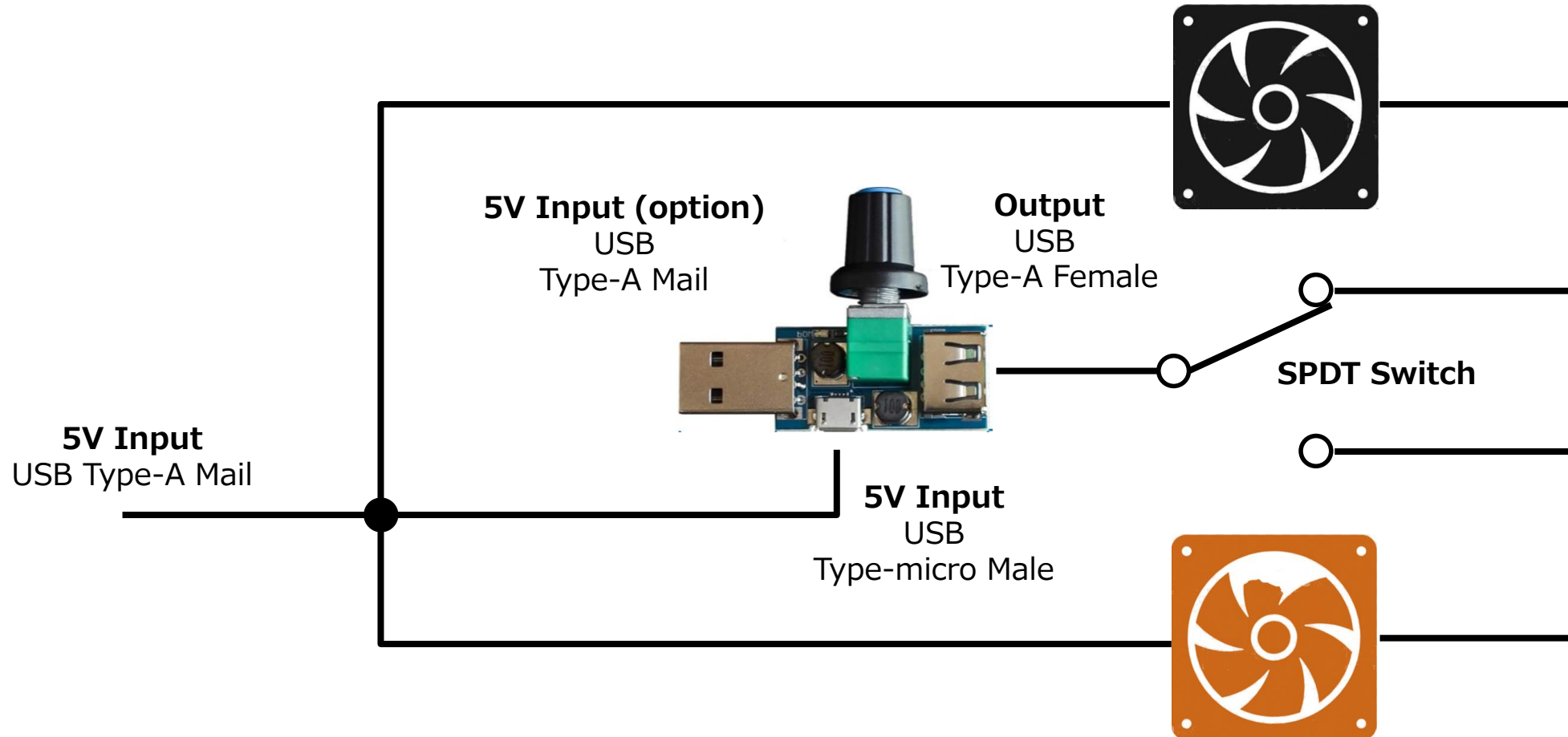
Note: There is no special components. You may replace those with your favorite one.

# How to make failure fan

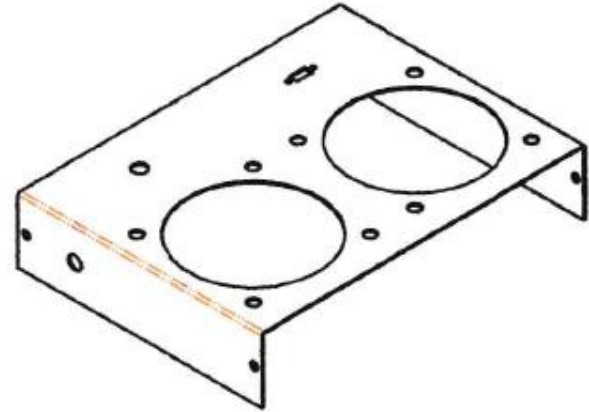
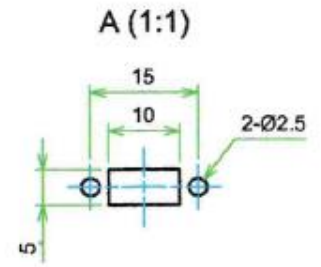
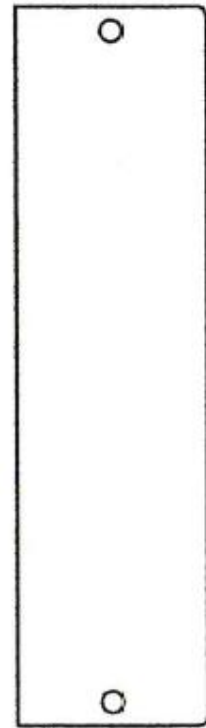
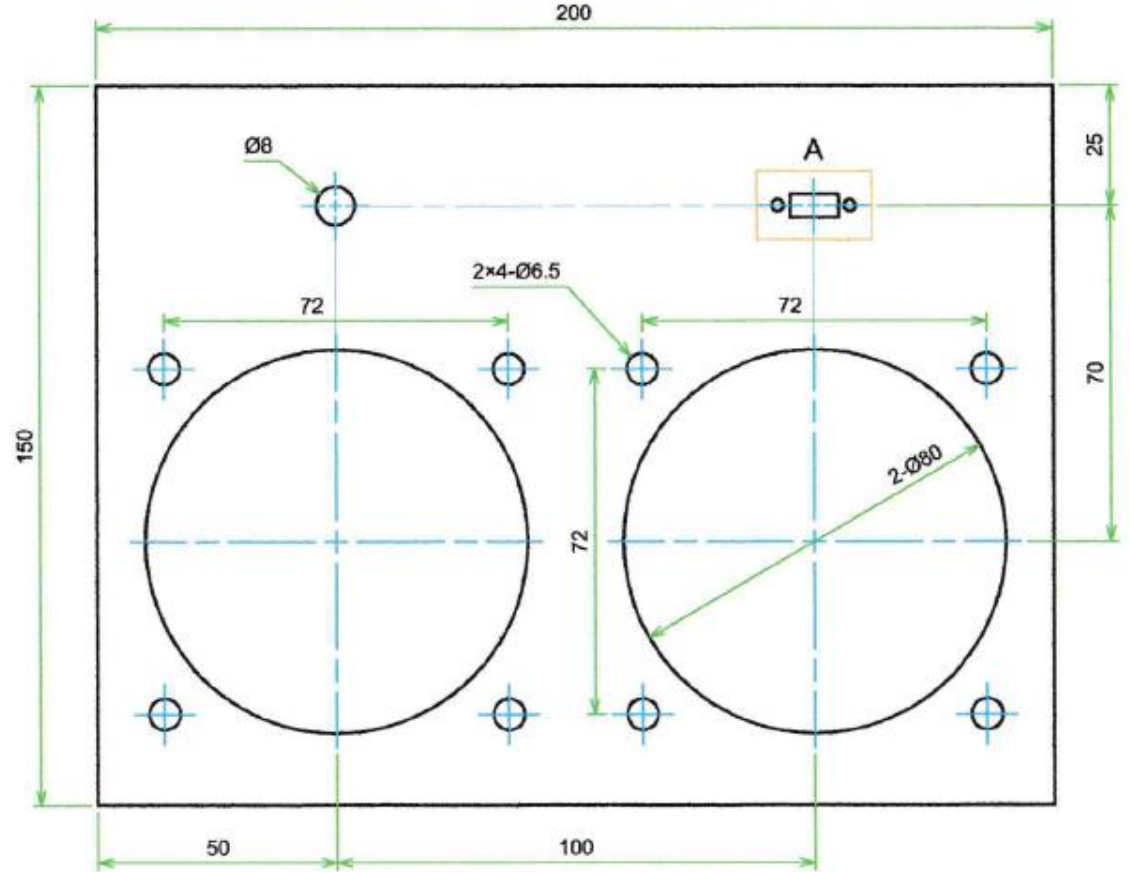
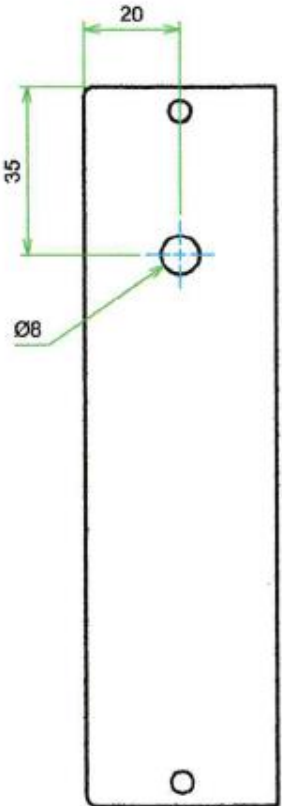


- Remove one of the blades
- It's better to remove a part of blade, not whole blade.
- Even if you remove a whole blade, it'll be no problem, but the vibration becomes larger.

# Circuit Diagram



# Aluminum box: Takachi YM-200, 200x40x150 (mm)



[Note: Refer to the On-line Catalog](#)