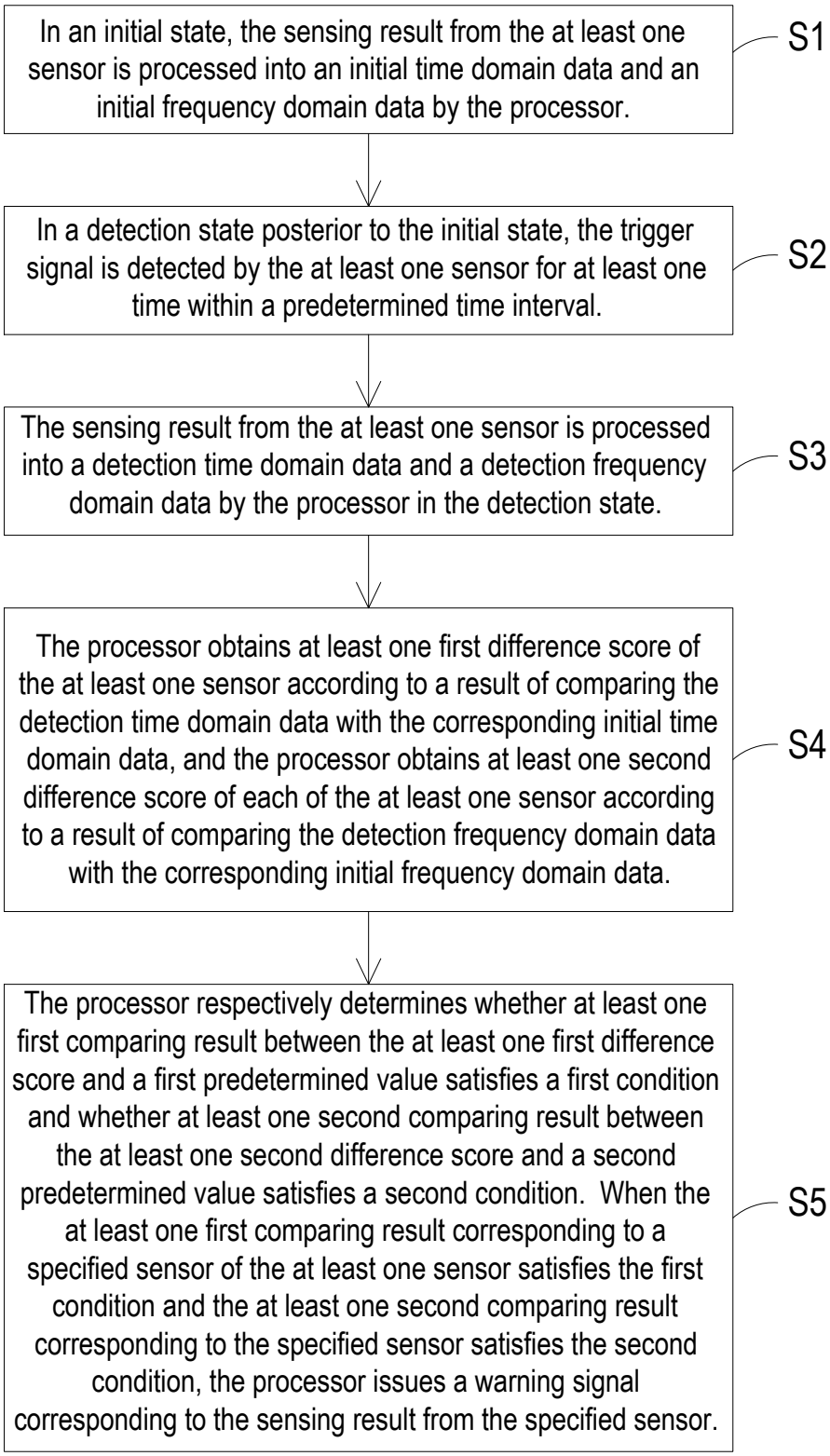

In an initial state, the sensing result from the at least one sensor is processed into an initial time domain data and an initial frequency domain data by the processor.
S1
In a detection state posterior to the initial state, the trigger signal is detected by the at least one sensor for at least one time within a predetermined time interval.
S2
The sensing result from the at least one sensor is processed into a detection time domain data and a detection frequency domain data by the processor in the detection state.
S3
The processor obtains at least one first difference score of the at least one sensor according to a result of comparing the detection time domain data with the corresponding initial time domain data, and the processor obtains at least one second difference score of each of the at least one sensor according to a result of comparing the detection frequency domain data with the corresponding initial frequency domain data.
S4
The processor respectively determines whether at least one first comparing result between the at least one first difference score and a first predetermined value satisfies a first condition and whether at least one second comparing result between the at least one second difference score and a second predetermined value satisfies a second condition. When the at least one first comparing result corresponding to a specified sensor of the at least one sensor satisfies the first condition and the at least one second comparing result corresponding to the specified sensor satisfies the second condition, the processor issues a warning signal corresponding to the sensing result from the specified sensor.
S5

FIG. 1

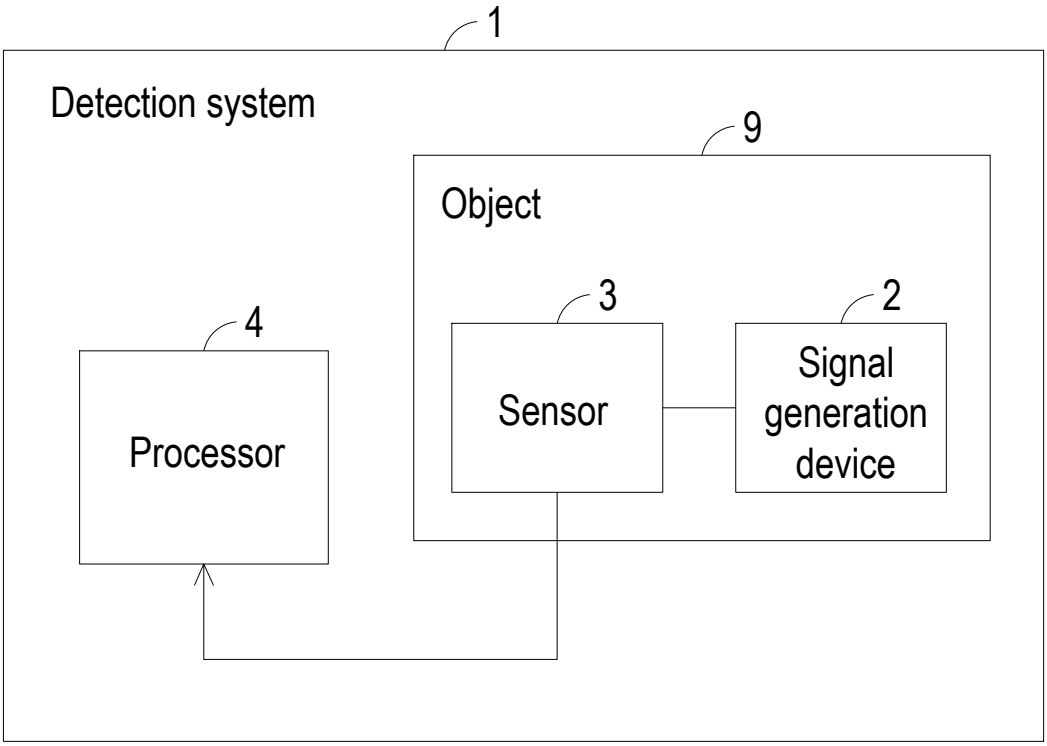

1
Detection system
9
Object
3
2
4
Sensor
Signal generation device
Processor

FIG. 2

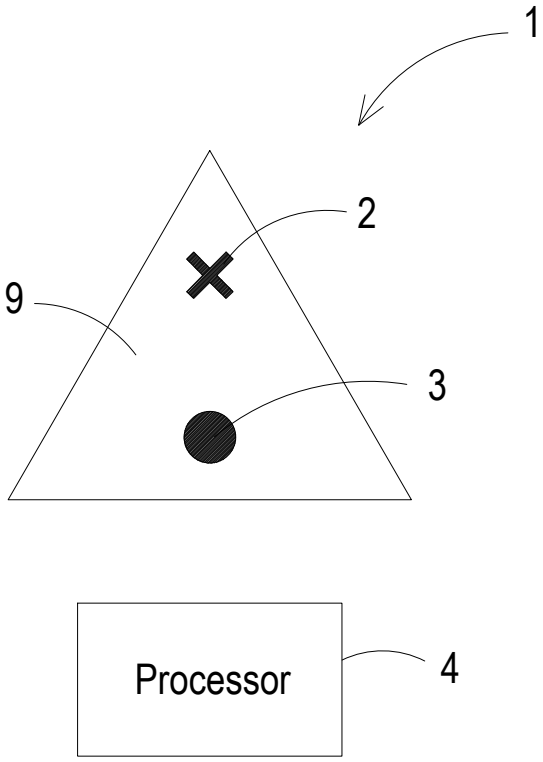


FIG. 3

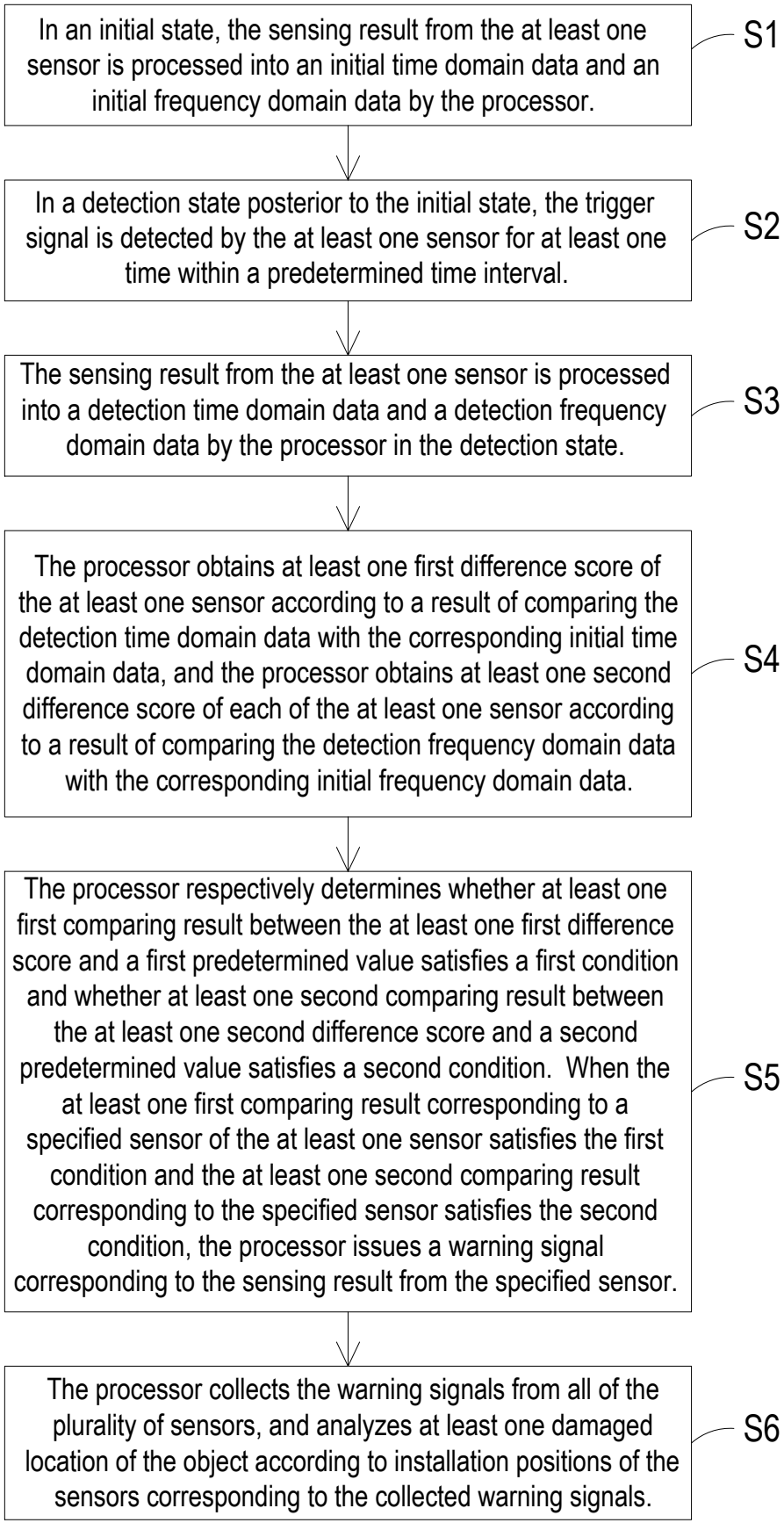

In an initial state, the sensing result from the at least one sensor is processed into an initial time domain data and an initial frequency domain data by the processor.
S1
In a detection state posterior to the initial state, the trigger signal is detected by the at least one sensor for at least one time within a predetermined time interval.
S2
The sensing result from the at least one sensor is processed into a detection time domain data and a detection frequency domain data by the processor in the detection state.
S3
The processor obtains at least one first difference score of the at least one sensor according to a result of comparing the detection time domain data with the corresponding initial time domain data, and the processor obtains at least one second difference score of each of the at least one sensor according to a result of comparing the detection frequency domain data with the corresponding initial frequency domain data.
S4
The processor respectively determines whether at least one first comparing result between the at least one first difference score and a first predetermined value satisfies a first condition and whether at least one second comparing result between the at least one second difference score and a second predetermined value satisfies a second condition. When the at least one first comparing result corresponding to a specified sensor of the at least one sensor satisfies the first condition and the at least one second comparing result corresponding to the specified sensor satisfies the second condition, the processor issues a warning signal corresponding to the sensing result from the specified sensor.
S5
The processor collects the warning signals from all of the plurality of sensors, and analyzes at least one damaged location of the object according to installation positions of the sensors corresponding to the collected warning signals.
S6

FIG. 4

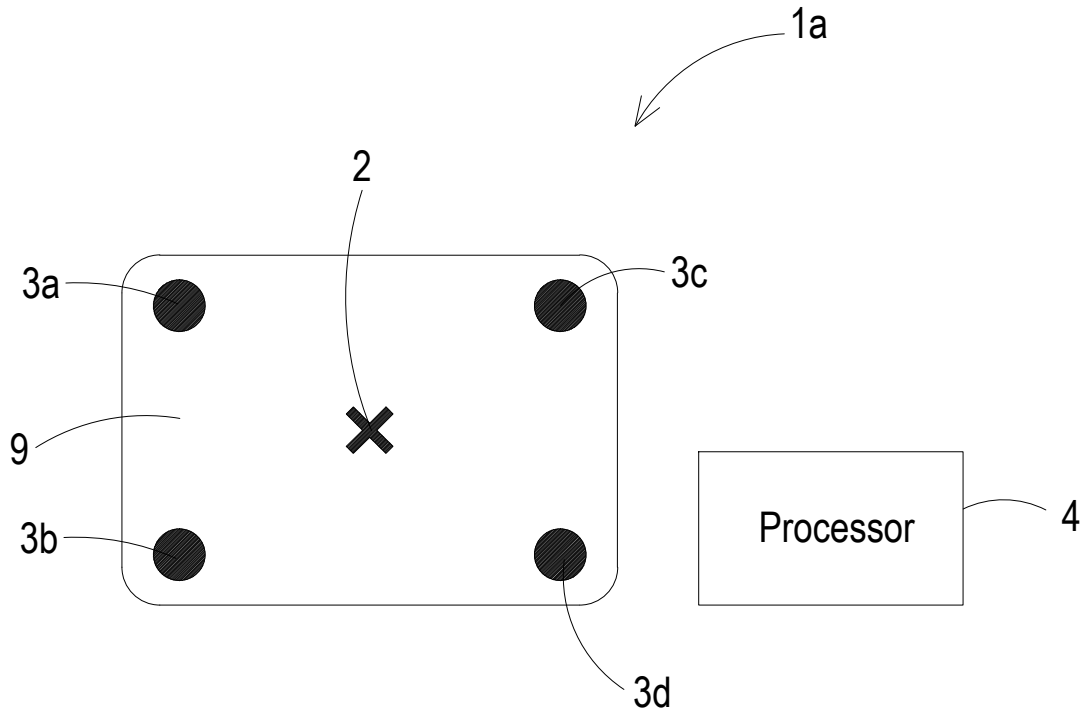


FIG. 5

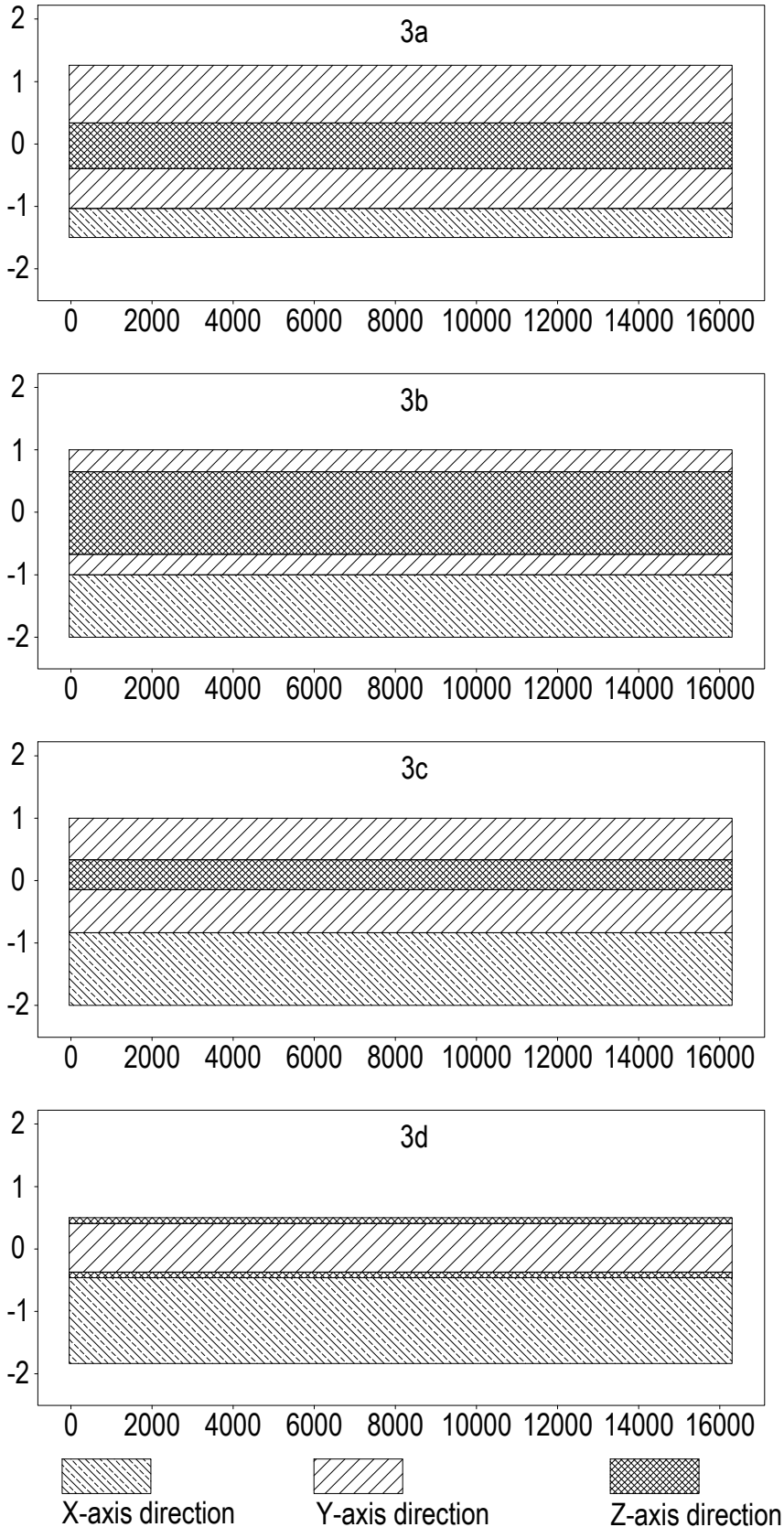

3a
3b
3c
3d
2
1
0
-1
-2
0 2000 4000 6000 8000 10000 12000 14000 16000
X-axis direction
Y-axis direction
Z-axis direction

FIG. 6A

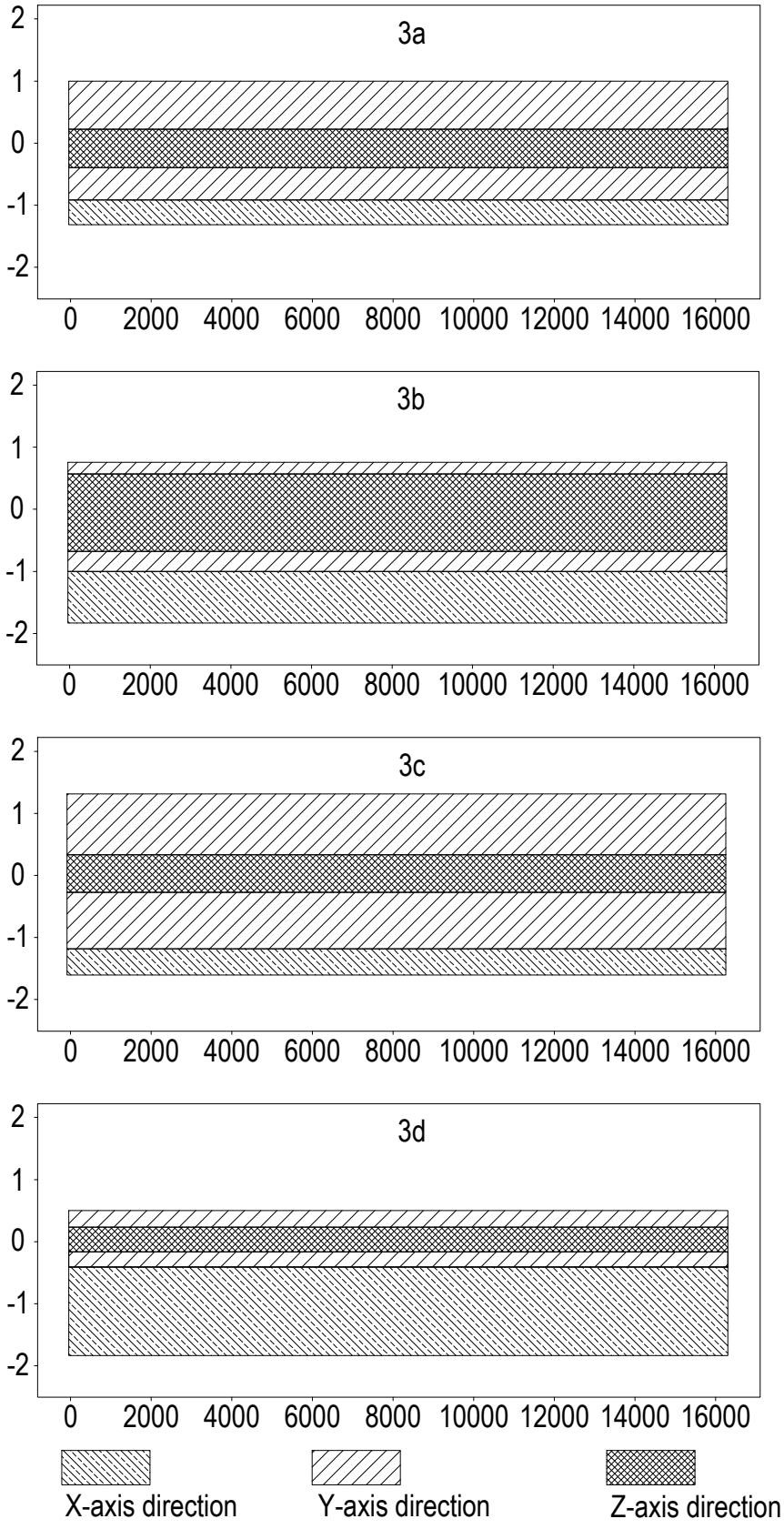

3a
3b
3c
3d
2
1
0
-1
-2
0 2000 4000 6000 8000 10000 12000 14000 16000
X-axis direction
Y-axis direction
Z-axis direction

FIG. 6B

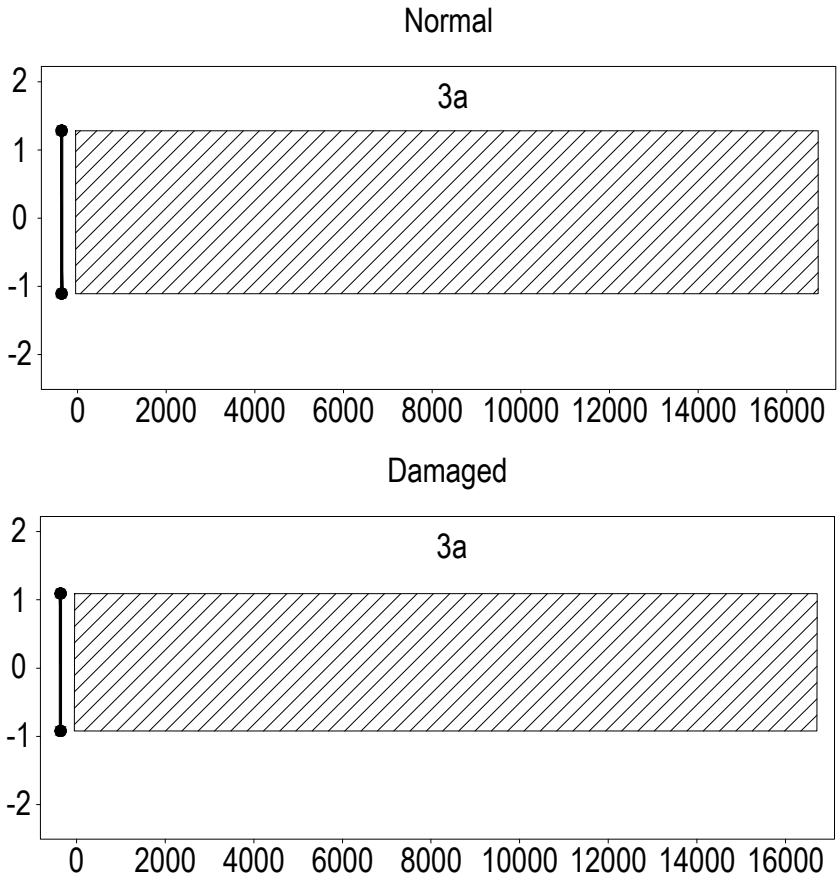

Normal
3a
2
1
0
-1
-2
0
2000
4000
6000
8000
10000
12000
14000
16000
Damaged
3a
2
1
0
-1
-2
0
2000
4000
6000
8000
10000
12000
14000
16000

FIG. 6C

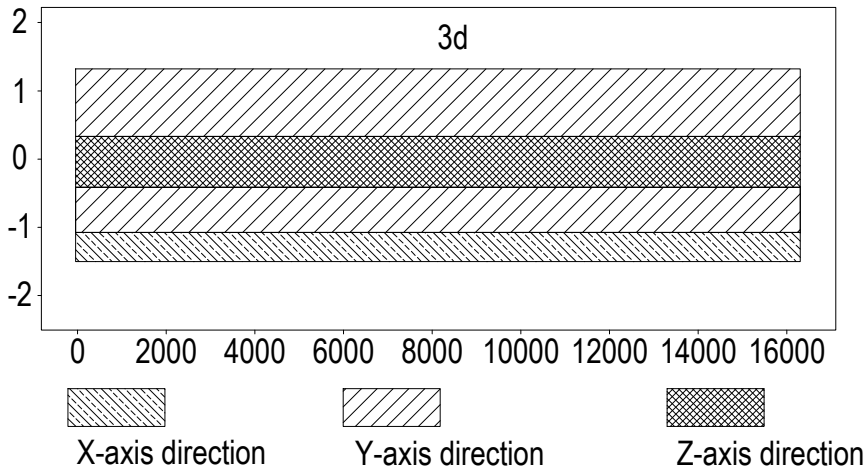

3d
2
1
0
-1
-2
0
2000
4000
6000
8000
10000
12000
14000
16000
X-axis direction
Y-axis direction
Z-axis direction

FIG. 6D

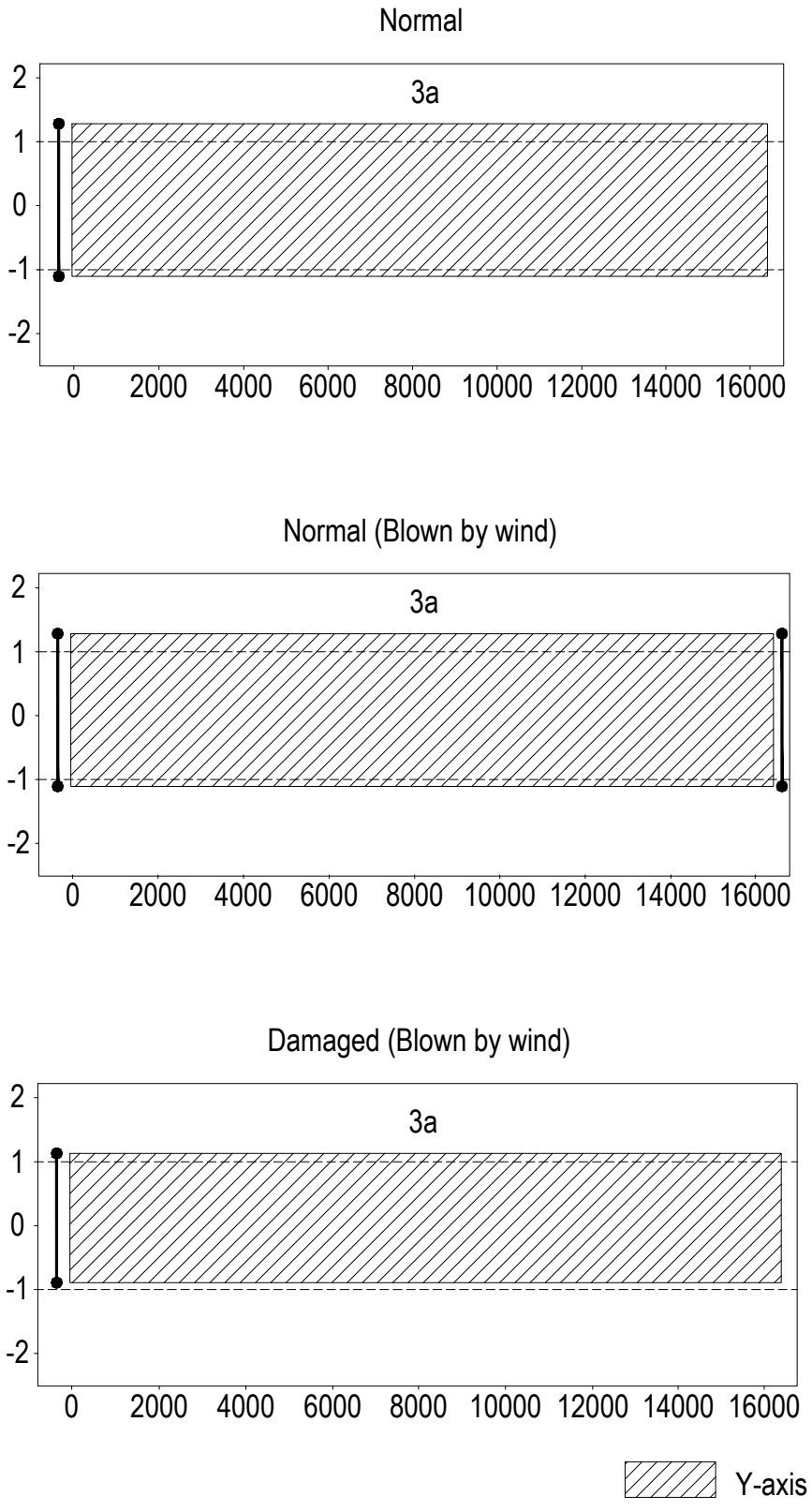

Normal
3a
2
1
0
-1
-2
0
2000
4000
6000
8000
10000
12000
14000
16000
Normal (Blown by wind)
3a
Damaged (Blown by wind)
3a
Y-axis

FIG. 6E

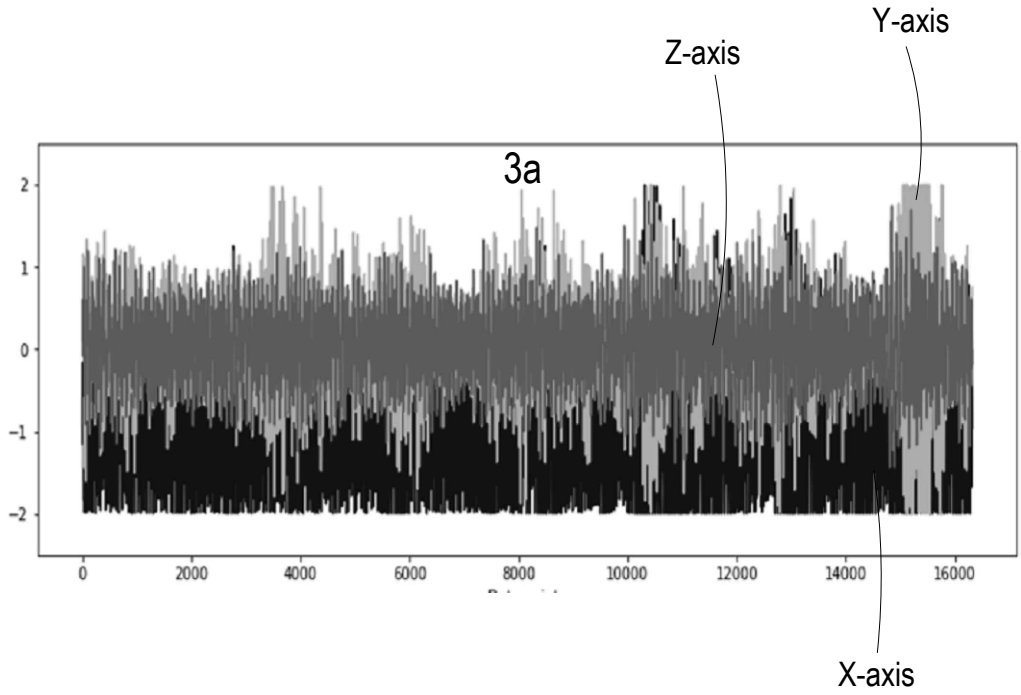
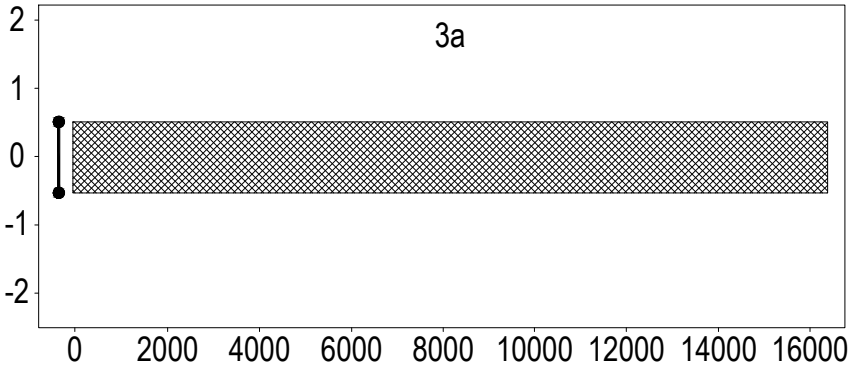
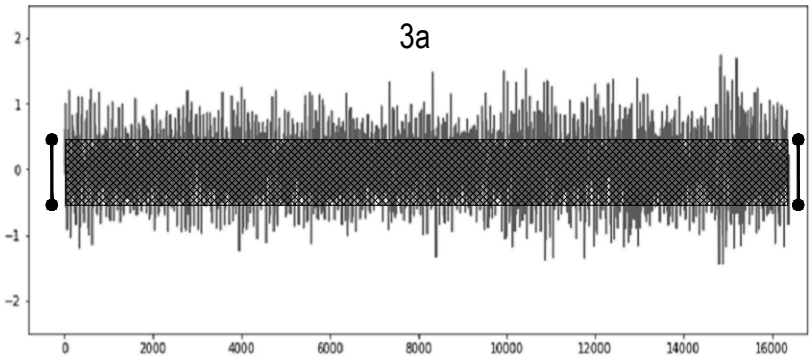

Y-axis
Z-axis
3a
2
1
0
−1
−2
0
2000
4000
6000
8000
10000
12000
14000
16000
X-axis

FIG. 6F

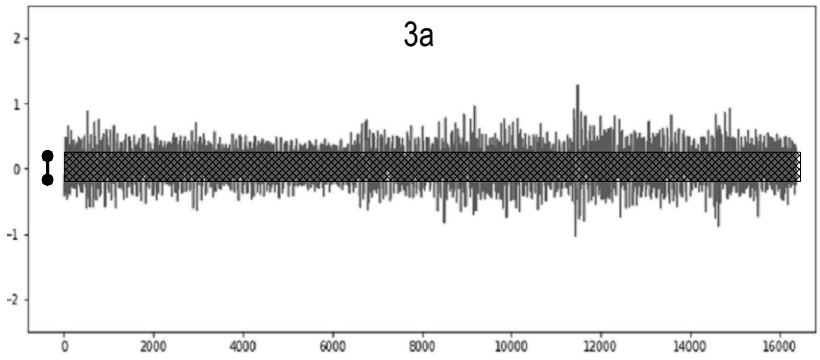
Normal



Normal (exposed to rain)



Damaged (exposed to rain)



Z-axis

FIG. 6G