

TAMA SAS Assembly Procedure

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- I. Seismic Attenuation System (SAS)
- II. Mirror Suspension and controls (SUS)
- III. SAS + SUS
- IV. SAS/SUS Releasing procedure
- V. System Diagnosis

I. SAS

0. install GAS blades into each filter,
tune vertical resonant frequencies,
measure optimal load for each filter
mount vertical LVDT/coil-magnet actuator on filter zero
1. place base ring
check base ring horizontality
mount IP flex joints on base bells
loosely assemble base bells on base plate
2. position flex joint's base bell on base ring using filter zero as template
(see figure TAMA06)
lock base bells' screws
install safety structure
3. install counterweight bells on each flex joint
mount legs on counterweight bell
check alignment (verticality) of legs
rotate base bells or flex joints, iterate process 2 (if necessary)
4. mount counter weights on bells
mount filter zero
check/tune F0 horizontality
lock F0 to safety structure with spacers
5. suspend standard filter
mount safety shelves
install vertical stepping motor on filter zero
mount dummy load on standard filter
lock filter to safety structure shelves with spacers
6. mount horizontal LVDTs, actuators, accelerometers, and stepping motors
release filters
tune stepping motors
quick diagnostics of active components
7. lock filter zero and standard filter to safety structure
remove dummy mass

SAS is ready for installation and to receive SUS

II. SUS

0. assemble all permanent magnets on magnet box
1. install platform on assembly structure
tune four mini GASs with dummy load
lock GASs in working position with range limiting screw
remove dummy loads and fold wires sideways
2. mount guitar tuner on intermediate mass
install intermediate mass on assembly structure
position mirror on stand and put in place below the assembly structure
3. feed mirror wires
adjust wire length with guitar knobs
lower and remove mirror stand
4. position recoil mass on stand and set in place
feed wires for recoil mass and adjust length with guitar knobs
lower stand and remove
clamp all eight mirror and recoil mass wires
cut excess wires and remove guitar tuner
5. lock mirror to recoil mass with set screws
connect recoil mass to intermediate mass using the spacers
6. place magnet box and strap it above intermediate mass
feed mini GAS wires in their clamps and hold them vertical using small masses
7. clamp mini GAS wires and cut excess length
lower magnet box in position
install and tune horizontal flex rods and vertical springs to magnet box
lock magnet box to intermediate mass using the set screws
8. connect the intermediate mass to the platform with spacers
9. install coil box over the platform and lock with set screws
install actuation coils in coil box

SUS is ready to be transported and installed into SAS

III. SAS + SUS

0. Position and level SAS in the vacuum chamber.

1. position coil box and platform below standard filter by means of spacers
2. connect platform to the standard filter with the suspension wire
3. install the six hexawires
4. connect electric cables to coil box and down to the recoil mass

SAS/SUS system is frozen and ready to be released for service

IV. Releasing procedure

1. release mirror from recoil mass
check position/alignment
 2. release int. mass from magnet box
check position/alignment
 3. release platform from coil box
check position/alignment
 4. release standard filter from safety shelves
 5. release filter zero from safety structure
ready for system diagnosis
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V. System Diagnosis