Sensors and Actuators

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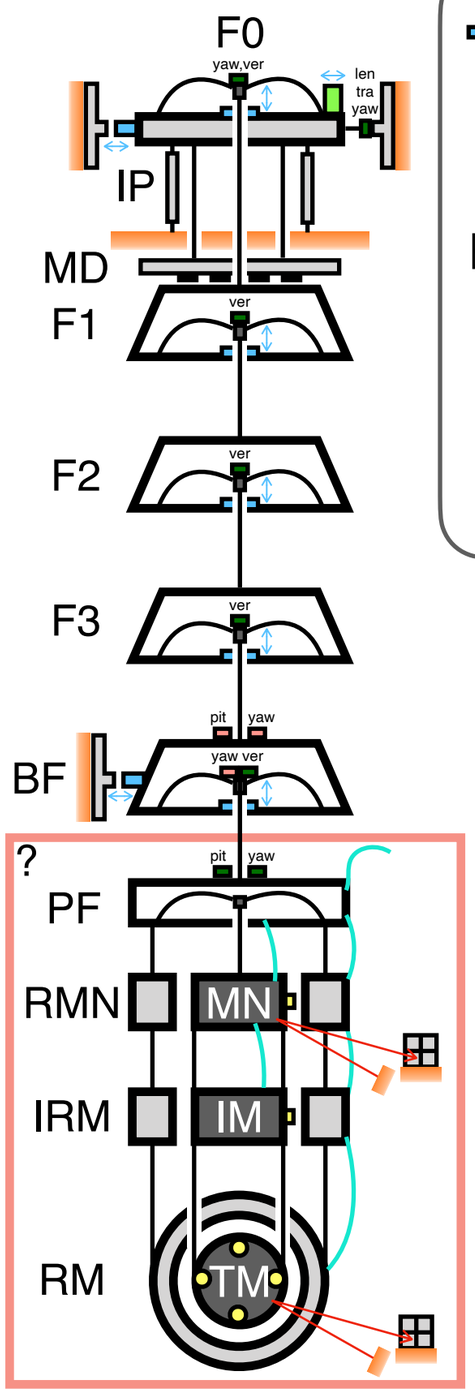
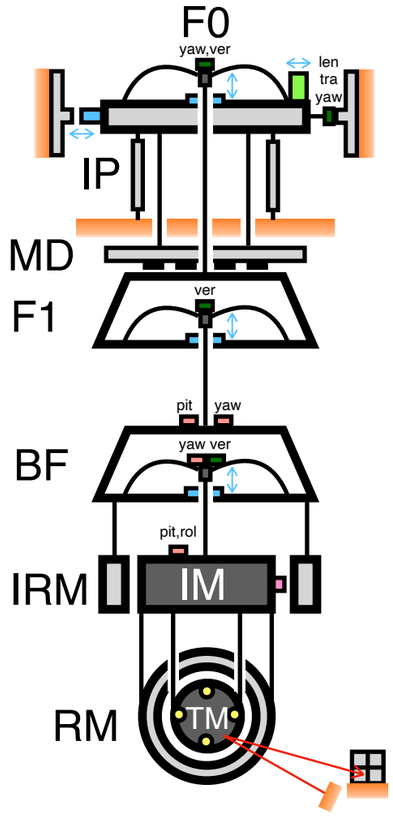
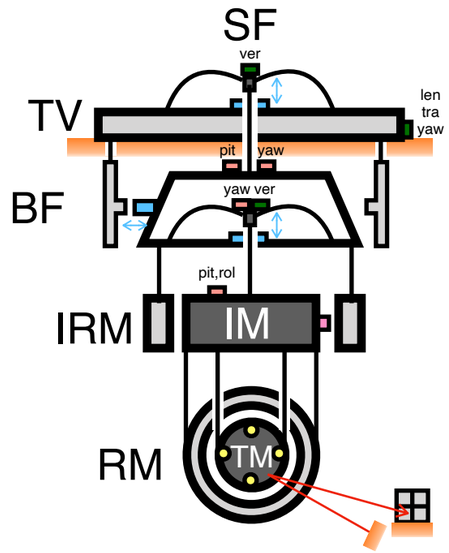


Type-A

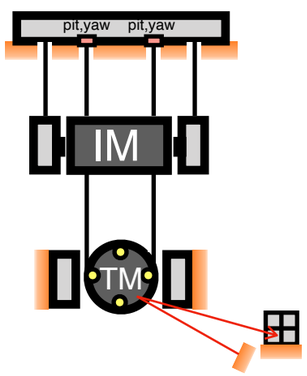
- GAS-LVDT/Voice Coil Actuator(VCA)
- LVDT/CMA
- Accelerometer
- OSEM
- Optical Lever (OpLev)
- CMA
- Photo Sensor (PS)/Coil Magnet Actuator(CMA)
- Stepper motor
- Picomotor
- Magnet



Type-B



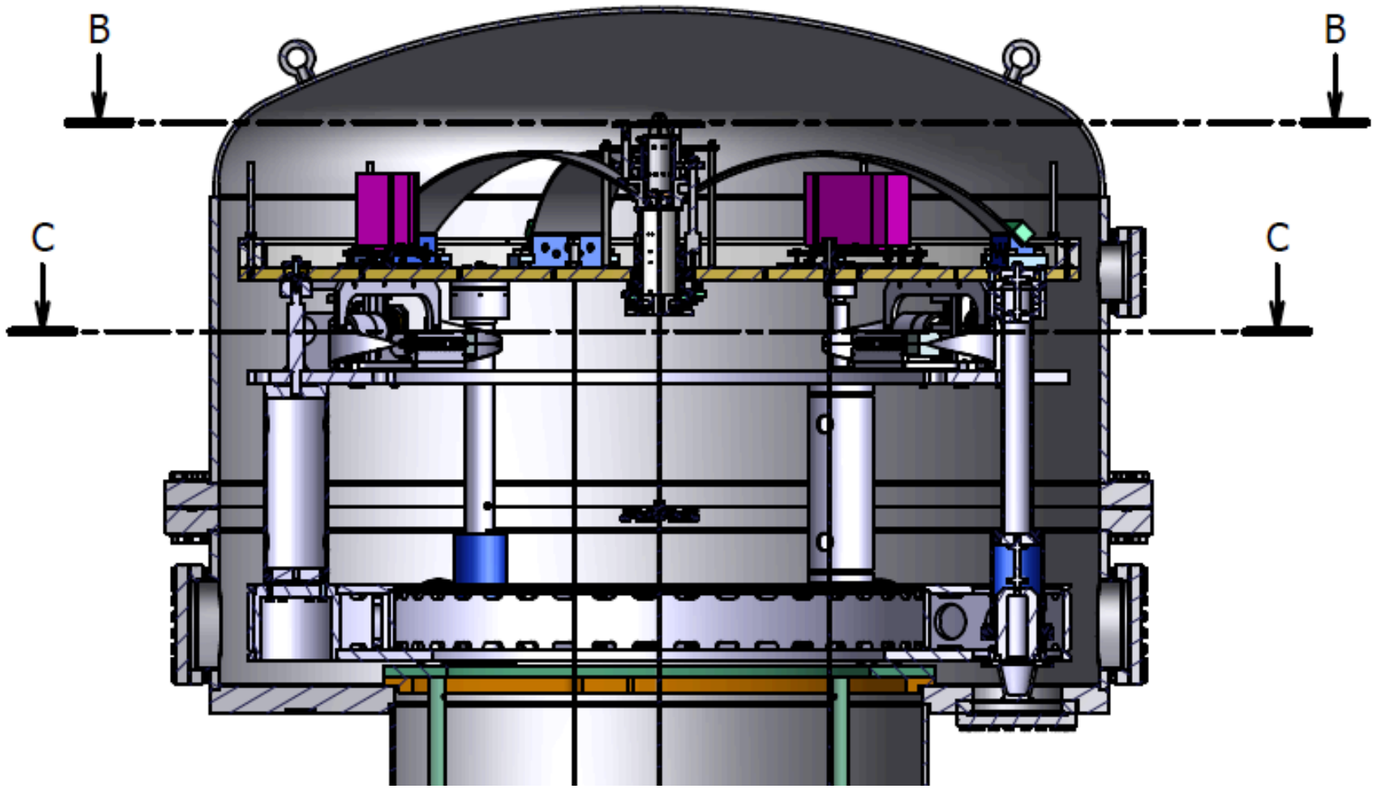
Type-Bp



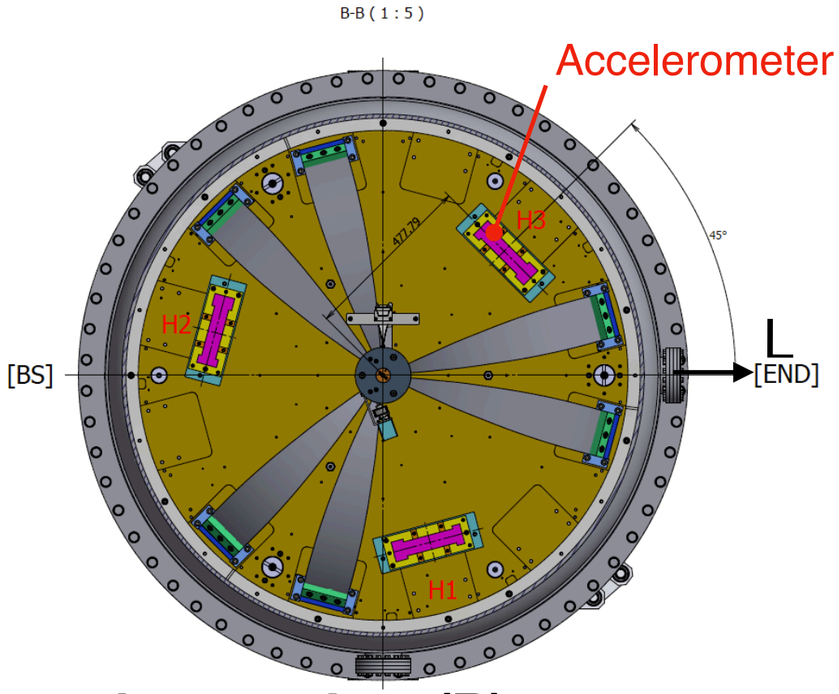
Type-C

Mirror basis for each suspensions

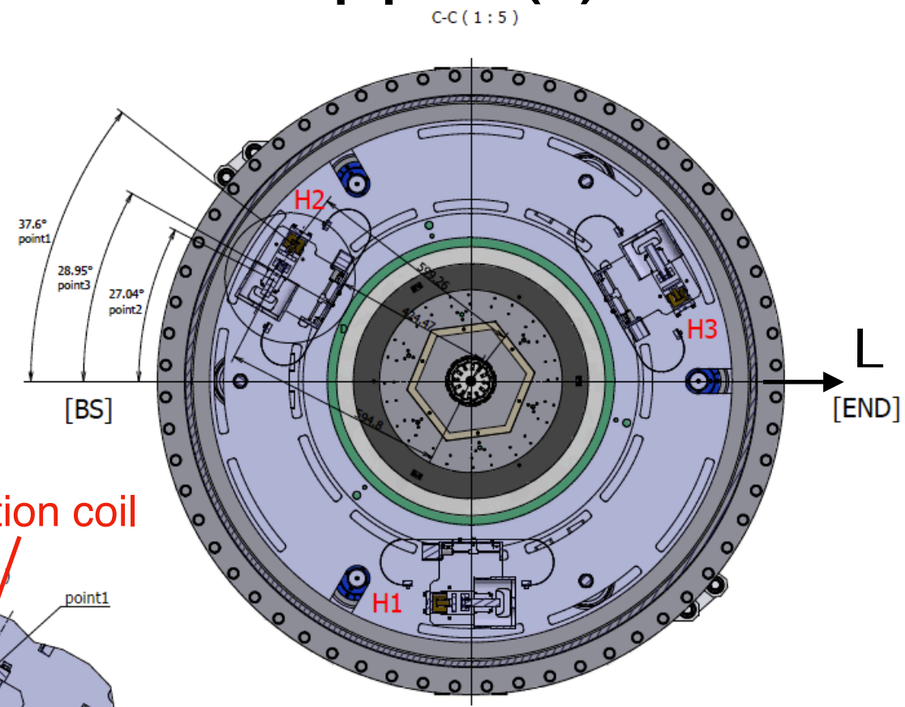
Top Plate (ITMY case)



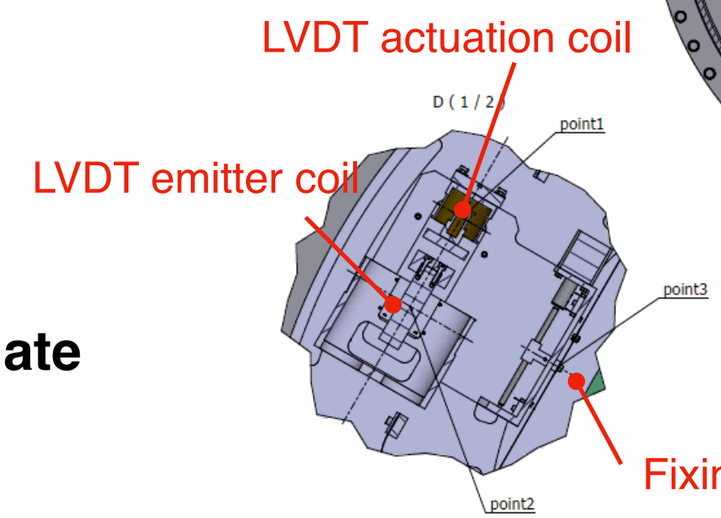
Four components on the top plate



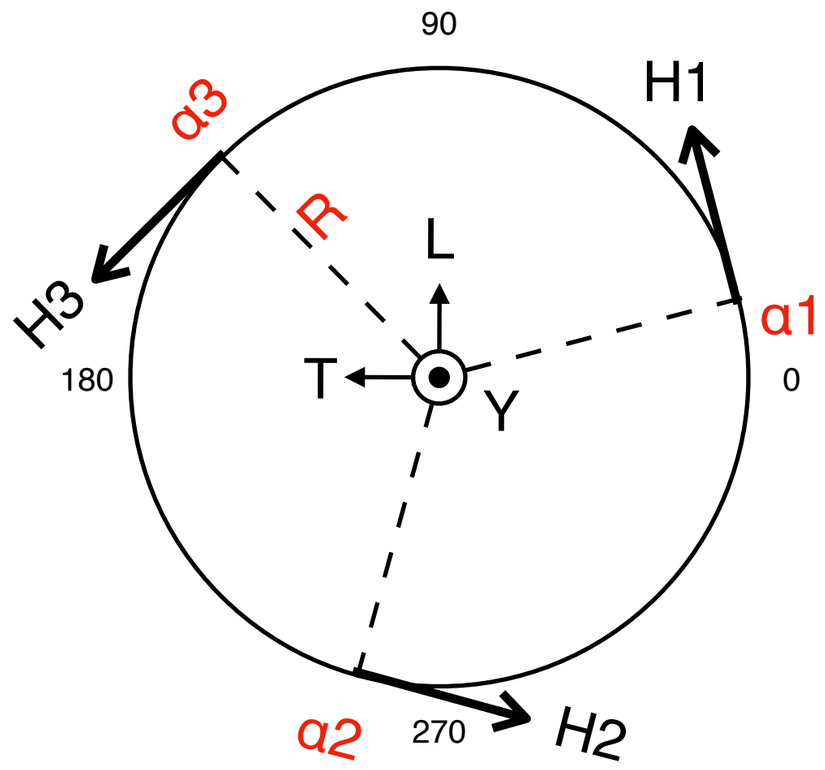
Above the top plate (B)



Bellow the top plate (C)



Top Plate / Diagonalization



$$\begin{bmatrix} L \\ T \\ Y \end{bmatrix} = \begin{bmatrix} \cos\alpha_1 & \sin\alpha_1 & r \\ \cos\alpha_2 & \sin\alpha_2 & r \\ \cos\alpha_3 & \sin\alpha_3 & r \end{bmatrix}^{-1} \begin{bmatrix} H_1 \\ H_2 \\ H_3 \end{bmatrix}$$

Sensing matrix : S
or
Actuation matrix : D

Top Plate / (1) LVDT emitter coils

	α1 [deg]	α2 [deg]	α3 [deg]	R [m]	Reference	
ETMX	-8	232	112	0.595	JGW-D2012142-v1	
ITMX	57	297	177	0.595	JGW-D2012142-v1	
ETMY	-8	232	112	0.595	JGW-D2012142-v1	
ITMY	57	297	177	0.595	JGW-D2012142-v1	
BS	32	272	152	0.594	JGW-D1605092-v4	
SR2	?	?	?	0.579	JGW-D1707077-v5	[1]
SR3	?	?	?	0.579	JGW-D1707077-v5	[1]
SRM	?	?	?	0.579	JGW-D1707077-v5	[1]

[1] Description about the position in p.10 seems to be wrong.

Top Plate / (2) LVDT actuator coils

	α1 [deg]	α2 [deg]	α3 [deg]	R [m]	Reference
ETMX	3	243	123	0.599	JGW-D2012142-v1
ITMX	68	308	188	0.599	JGW-D2012142-v1
ETMY	3	243	123	0.599	JGW-D2012142-v1
ITMY	68	308	188	0.599	JGW-D2012142-v1
BS	21	261	141	0.601	JGW-D1605092-v4
SR2	22	262	142	0.599	JGW-D1707077-v5
SR3	22	262	142	0.599	JGW-D1707077-v5
SRM	22	262	142	0.599	JGW-D1707077-v5

Top Plate / (3) Accelerometer

	α1 [deg]	α2 [deg]	α3 [deg]	R [m]	Reference	
ETMX	15	255	135	0.477	JGW-D2012142-v1	[1]
ITMX	15	255	135	0.477	JGW-D2012142-v1	
ETMY	15	255	135	0.477	JGW-D2012142-v1	[1]
ITMY	15	255	135	0.477	JGW-D2012142-v1	
BS	15	255	135	0.592	JGW-D1605092-v4	
SR2	15	255	135	0.592	JGW-D1707077-v5	[2]
SR3	15	255	135	0.592	JGW-D1707077-v5	[2]
SRM	15	255	135	0.592	JGW-D1707077-v5	[2]

[1] New LVDT acc. for EX and EY should be installed as same as the IX and IY, according to Sato-san.

[2] Geophone for SRs would be installed as same as the BS although no description is written.

Top Plate / (4) Fixing point of FR

	α1 [deg]	α2 [deg]	α3 [deg]	R [m]	Reference
ETMX	1	241	121	0.424	JGW-D2012142-v1
ITMX	59	299	179	0.424	JGW-D2012142-v1
ETMY	1	241	121	0.424	JGW-D2012142-v1
ITMY	59	299	179	0.424	JGW-D2012142-v1
BS	-30	210	90	0.512	JGW-D1605092-v4
SR2	31	271	151	0.424	JGW-D1707077-v5
SR3	31	271	151	0.424	JGW-D1707077-v5
SRM	31	271	151	0.424	JGW-D1707077-v5