

## **BEAM SPLITTER Tower:** location of electrically connected Devices

**CODING CONVENTION:** The code is divided in 3 fields. The field separator is a dot. The 3<sup>th</sup> field is used only when more than one device of the same type is hosted on the same suspension stage.

DeviceType . SuspensionStage . DevicePosition (or Function)

<b>M</b>	Motor
<b>MV</b>	Vertical Motor
<b>MH</b>	Horizontal Motor
<b>MA</b>	Angular Motor
<b>TM</b>	TiltMeter
<b>C</b>	Coil
<b>CV</b>	Vertical Coil
<b>CH</b>	Horizontal Coil
<b>T</b>	Temperature probe
<b>AV</b>	Vert. Accelerometer
<b>AH</b>	Hor. Accelerometer
<b>LV</b>	Vertical LVDT
<b>LH</b>	Horizontal LVDT

<b>F0</b>	Filter #0 or top-stage
<b>F1</b>	Filter #1
<b>F2</b>	Filter #2
<b>F3</b>	Filter #3
<b>F4</b>	Filter #4
<b>F7</b>	Filter #7
<b>MA</b>	Marionette
<b>RM</b>	Reference Mass

<b>1, 2, 3, ...</b>	
<b>L</b>	Left
<b>R</b>	Right
<b>U</b>	Up
<b>D</b>	Down
<b>F</b>	Front
<b>B</b>	Back
<b>UL</b>	Up Left
<b>UR</b>	Up Right
<b>DL</b>	Down Left
<b>DR</b>	Down Right
<b>LL</b>	Lateral Left
<b>LR</b>	Lateral Right
<b>TX</b>	$\varnothing_x$ degree of freedom
<b>TZ</b>	$\varnothing_z$ degree of freedom
<b>AH1</b>	Hor. Accelerom. #1
<b>AH2</b>	Hor. Accelerom. #2
<b>AH3</b>	Hor. Accelerom. #3
<b>AV1</b>	Vert. Accelerom. #1
<b>AV2</b>	Vert. Accelerom. #2

### 20 MOTORS

<b>code</b>	<b>Location</b> <i>(see also drawings in the following)</i>	<b>vacuum cable ID</b>	<b>vacuum cable type</b>	<b>notes</b>
<b>MV.F0.U</b>	top-screw on F#0	<b>J1</b>	STP, AWG24	MV.1 (old code)
<b>MV.F0</b>	fishing-rod on F#0	<b>A1</b>	STP, AWG24	MV.2
<b>MV.F1</b>	fishing-rod on F#1	<b>B1</b>	STP, AWG24	MV.3
<b>MV.F2</b>	fishing-rod on F#2	<b>C1</b>	STP, AWG24	MV.4
<b>MV.F3</b>	fishing-rod on F#3	<b>D1</b>	STP, AWG24	MV.5
<b>MV.F4</b>	fishing-rod on F#4	<b>E1</b>	STP, AWG24	MV.6
<b>MV.F7</b>	fishing-rod on F#7	<b>F1</b>	STP, AWG24	MV.7
<b>MH.F0.1</b>	trolley on inner structure	<b>H3</b>	STP, AWG24	MH.1
<b>MH.F0.2</b>	trolley on inner structure	<b>H1</b>	STP, AWG24	MH.2
<b>MH.F0.3</b>	trolley on inner structure	<b>H2</b>	STP, AWG24	MH.3
<b>MH.F7.1</b>	balancing mass on F#7	<b>R1</b>	STP, AWG24	MH.4
<b>MH.F7.2</b>	balancing mass on F#7	<b>R2</b>	STP, AWG24	MH.5
<b>MH.MA</b>	balanc. mass on marion.	<b>T2</b>	STP, AWG24 PYRE-ML 0.7mm	MH.6 With inverted logic
<b>MA.F7.U</b>	F#7 top (for rotation)	<b>R3</b>	STP, AWG24	MA.1
<b>MA.F7.D</b>	F#7 bottom (for rotation)	<b>T1</b>	STP, AWG24	MA.2
<b>M.F0.AH1</b>	Hor. Accelerometer on top-stage	<b>O2</b>	STP, AWG24	
<b>M.F0.AH2</b>	Hor. Accelerometer on top-stage	<b>M2</b>	STP, AWG24	
<b>M.F0.AH3</b>	Hor. Accelerometer on top-stage	<b>N2</b>	STP, AWG24	
<b>M.F0.AV1</b>	Vert. Accelerometer on F#0	<b>K1</b>	STP, AWG24	
<b>M.F0.AV2</b>	Vert. Accelerometer on F#0	<b>L1</b>	STP, AWG24	

total number of conductors/tower needed for motors:  $20 \times 7 = 140$  plus  $20 \times 2 = 40$  shields (only for phases).

## 2 TILTMETERS

<b>code</b>	<b>Location</b> (see also drawings in the following)	<b>vacuum cable ID</b>	<b>vacuum cable type</b>	<b>notes</b>
<b>TM.F7.TX</b>	F#7 upper part	<b>F4</b>	STP, AWG24	LEMO pins 1, 2, 3
<b>TM.F7.TZ</b>	F#7 upper part	<b>F4</b>	STP, AWG24	LEMO pins 4, 5, 6

total number of conductors for tiltmeters:  $2 \times 2 = 4$ , plus  $2 \times 1 = 2$  shields.

## n. 15 COILS

<b>code</b>	<b>Location</b> (see also drawings in the following)	<b>vacuum cable ID</b>	<b>vacuum cable type</b>	<b>notes</b>
<b>CH.F0.1</b> <b>CH.F0.2</b> <b>CH.F0.3</b>	Safety frame ring	<b>G2</b> <b>G4</b> <b>G6</b>	STP, AWG24 (double)	CH.1 CH.2 CH.3
<b>CV.F0.1</b> <b>CV.F0.2</b>	crossbar on F#0 crossbar on F#0 (fish.rod side)	<b>J3</b> <b>J2</b>	STP, AWG24	CV.1 CV.2
<b>C.F7.F</b> <b>C.F7.B</b> <b>C.F7.R</b> <b>C.F7.L</b>	F#7 legs	<b>S3</b> <b>S2</b> <b>S4</b> <b>S1</b>	STP, AWG24 (double)	
<b>C.RM.UL</b> <b>C.RM.UR</b> <b>C.RM.DL</b> <b>C.RM.DR</b> <b>C.RM.LL</b> <b>C.RM.LR</b>	reference mass	<b>V3</b> <b>V4</b> <b>V5</b> <b>V2</b> <b>V1</b> <b>V6</b>	STP, AWG24, PYRE-ML 0.5mm	2 interconnessioni con coppie Lemo 0B.302 in prossimita' delle coils

total number of conductors for coils:  $15 \times 2 = 24$ , plus 15 shields.

## 6 (couples of) THERMAL PROBES

<b>code</b>	<b>location</b>	<b>vacuum cable ID</b>	<b>vacuum cable type</b>	<b>notes</b>
<b>T.F0.1</b> <b>T.F0.2</b>	antispring back on F#0	<b>A2</b>	STP, AWG24	TP.1
<b>T.F1.1</b> <b>T.F1.2</b>	antispring back on F#1	<b>B2</b>	STP, AWG24	TP.2
<b>T.F2.1</b> <b>T.F2.2</b>	antispring back on F#2	<b>C2</b>	STP, AWG24	TP.3
<b>T.F3.1</b> <b>T.F3.2</b>	antispring back on F#3	<b>D2</b>	STP, AWG24	TP.4
<b>T.F4.1</b> <b>T.F4.2</b>	antispring back on F#4	<b>E2</b>	STP, AWG24	TP.5
<b>T.F7.1</b> <b>T.F7.2</b>	antispring back on F#7	<b>F2</b>	STP, AWG24	TP.6

total number of conductors for thermal probes:  $6 \times 4 = 24$ , plus  $6 \times 2 = 12$  shields.

## 5 ACCELEROMETERS

<b>code</b>	<b>Location</b> (see also drawings in the following)	<b>vacuum cable ID</b>	<b>vacuum cable type</b>	<b>notes</b>
AH.F0.1	top-ring	O2	STP, AWG24	AH.1
AH.F0.2	top-ring	M2	STP, AWG24	AH.2
AH.F0.3	top-ring	N2	STP, AWG24	AH.3
AV.F0.1	crossbar F#0	K1	STP, AWG24	AV.1
AV.F0.2	crossbar F#0 (fish.rod side)	L1	STP, AWG24	AV.2

total number of conductors for accelerometers:  $5 \times 13 = 65$ , plus  $5 \times 5 = 25$  shields (motors included).

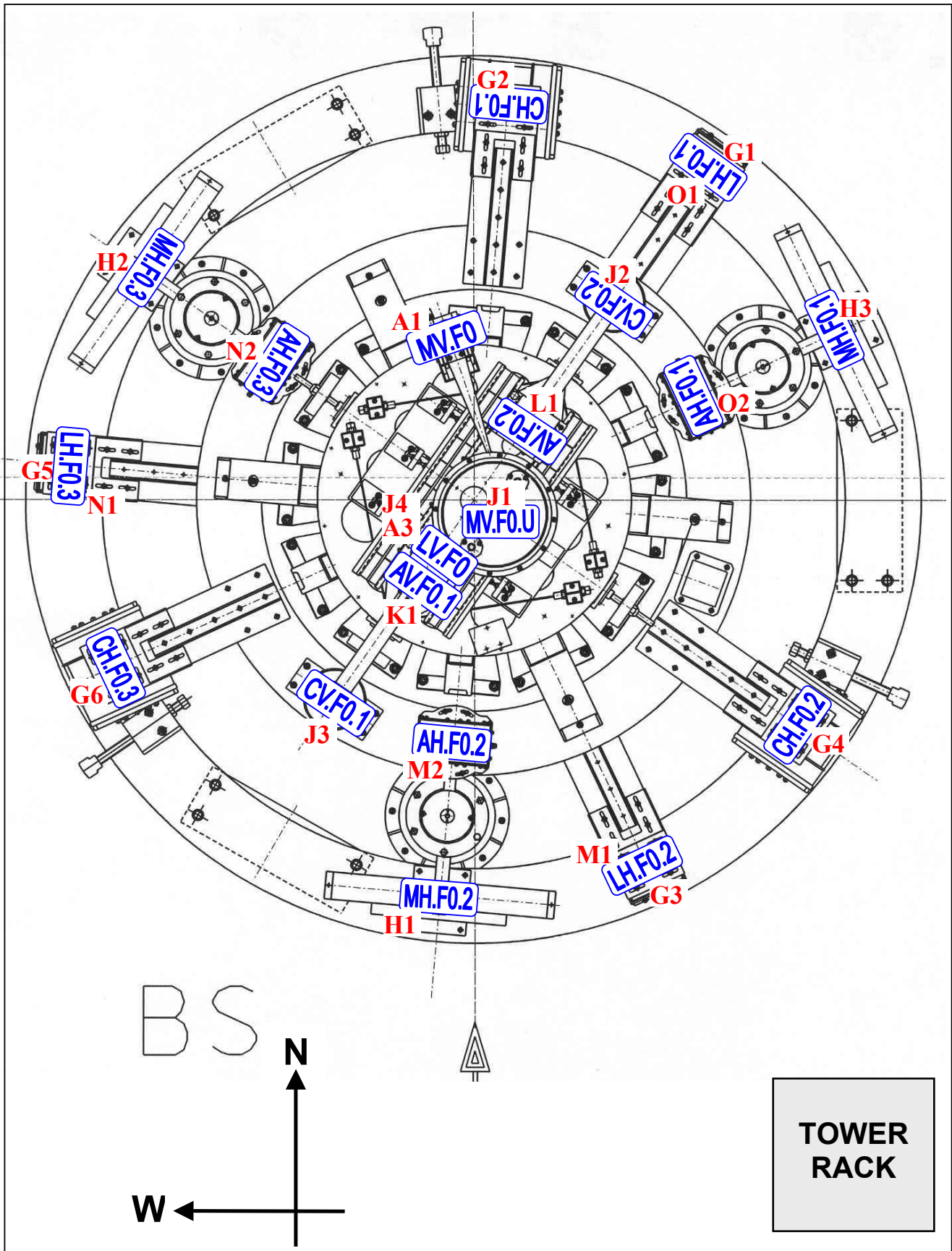
## 12 LVDTs

<b>code</b>	<b>Location</b> (see also drawings in the following)	<b>vacuum cable ID</b>	<b>vacuum cable type</b>	<b>notes</b>
LH.F0.1	Primary on top-ring	O1	STP, AWG24	LH.1
	Secondary on inner structure	G1	STP, AWG24	
LH.F0.2	Primary on top-ring	M1	STP, AWG24	LH.2
	Secondary on inner structure	G3	STP, AWG24	
LH.F0.3	Primary on top-ring	N1	STP, AWG24	LH.3
	Secondary on inner structure	G5	STP, AWG24	
LV.F0	primary on F#0 crossbar	J4	STP, AWG24	LV.1
	secondary on F#0 body	A3	STP, AWG24	
LV.F1	F#1	B3	STP, AWG24	LV.2
LV.F2	F#2	C3	STP, AWG24	LV.3
LV.F3	F#3	D3	STP, AWG24	LV.4
LV.F4	F#4	E3	STP, AWG24	LV.5
LV.F7	F#7	F3	STP, AWG24	LV.6
LH.F7.1	Primary on F#0 body	T3a	STP, AWG24	
	Secondary on bottom ring	W1	STP, AWG24	
LH.F7.2	Primary on F#0 body	T3b	STP, AWG24	
	Secondary on bottom ring	W2	STP, AWG24	
LH.F7.3	Primary on F#0 body	T3c	STP, AWG24	
	Secondary on bottom ring	W3	STP, AWG24	

total number of conductors for LVDTs:  $12 \times 4 = 48$ , plus  $12 \times 2 = 24$  shields.

**F#0 / TOP-STAGE devices**

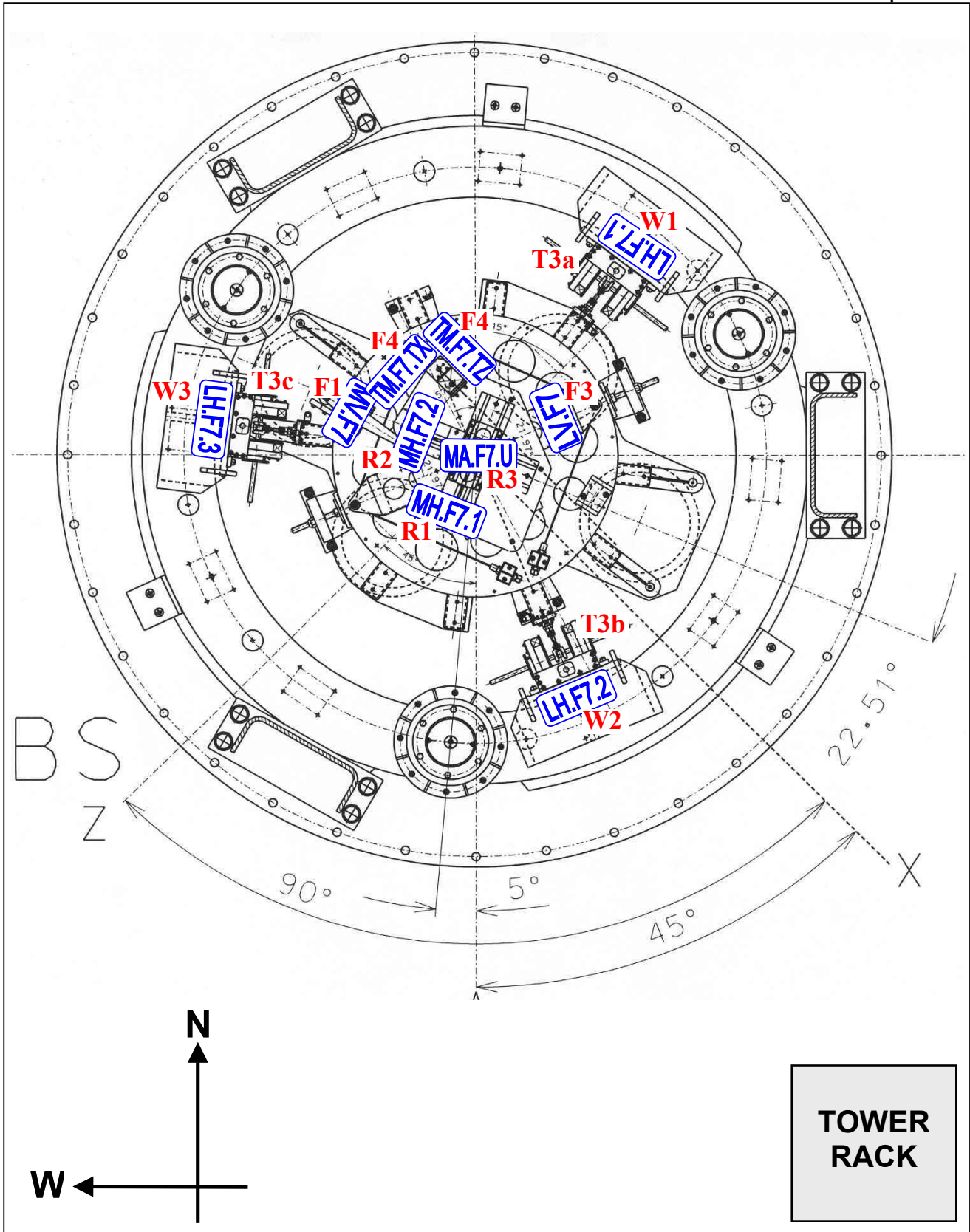
top view





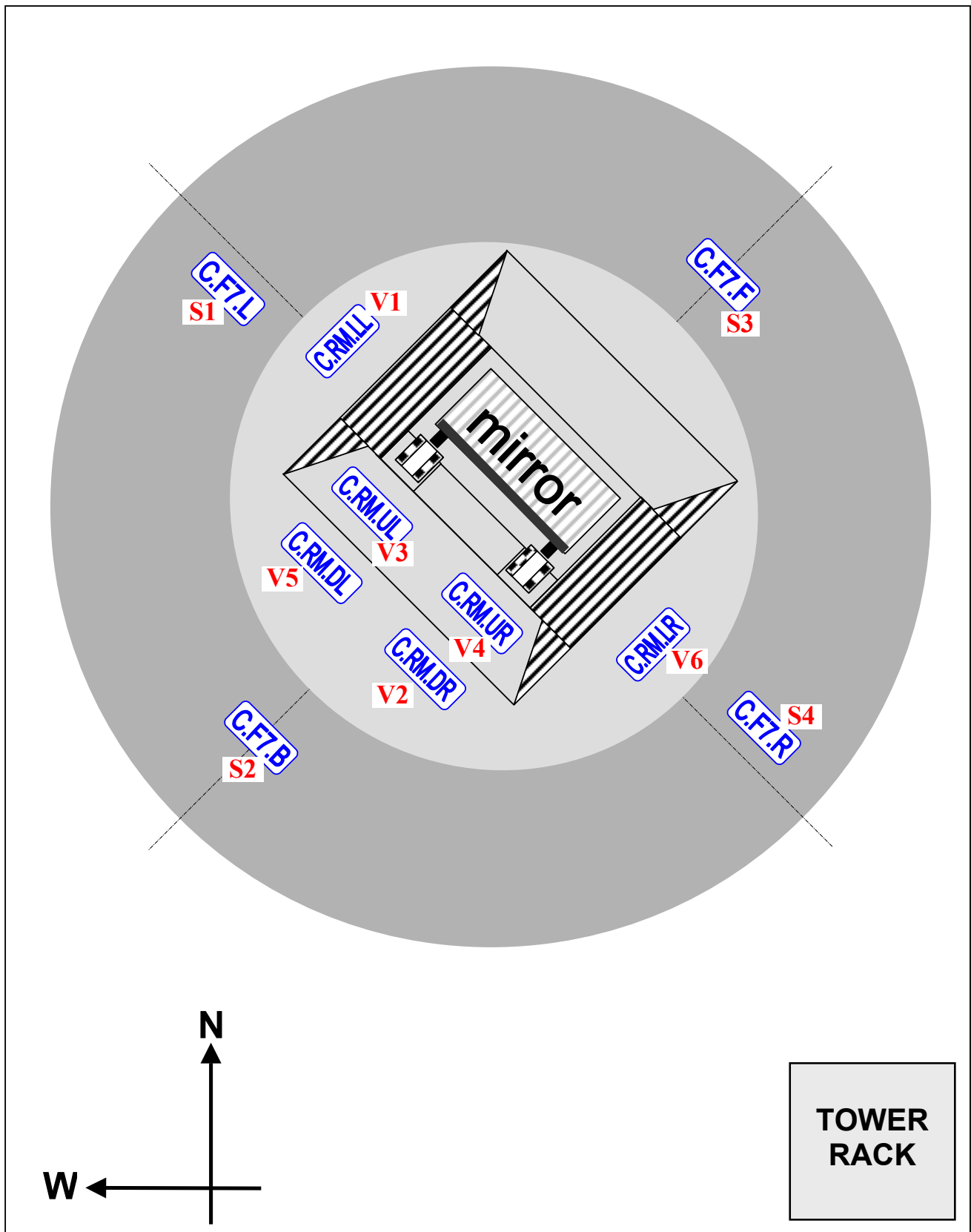
**FILTER #7 (upper part) devices**

top view

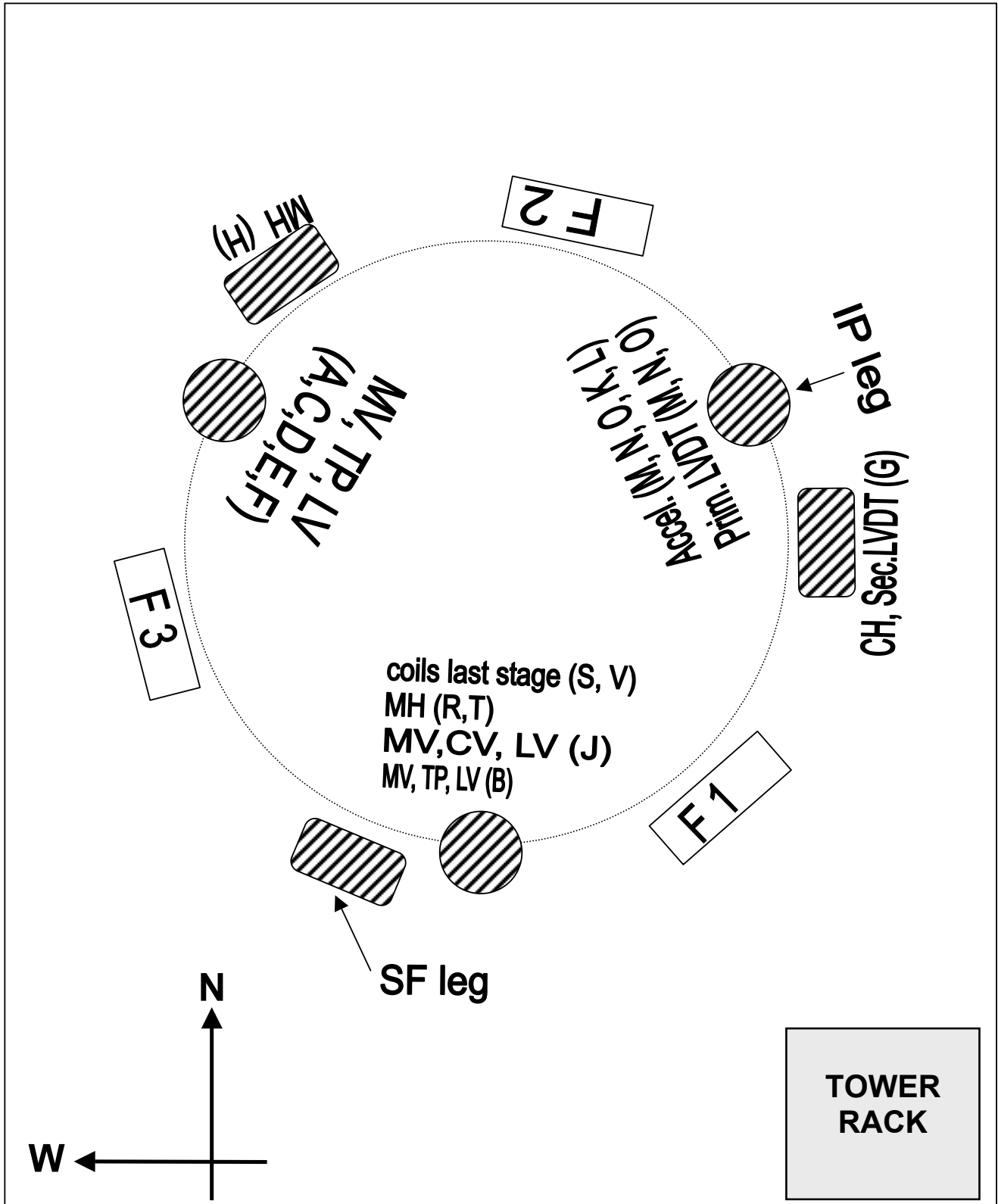


location of F#7 and Ref-Mass coils

top view

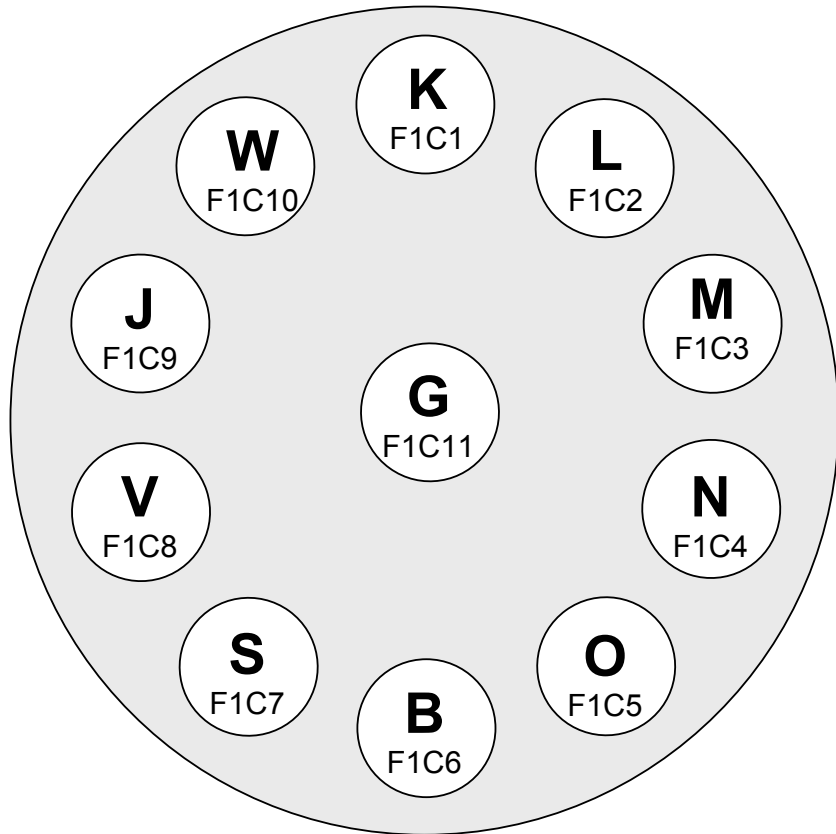


Cable arrangement along inverted pendulum (IP) legs and safety structure (SF) legs



Connector location on flanges

Flange **F1**  
(air side view)



Flange **F2**  
(air side view)

