

## **DETECTION Tower:** **location and connection 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>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>PZ</b>	Piezo actuators

<b>F0</b>	Filter #0 or top-stage
<b>F7</b>	Filter #7
<b>MA</b>	Marionette
<b>B</b>	Bench
<b>G</b>	Ground
<b>BR</b>	Bottom Ring

<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>	$\vartheta_x$ degree of freedom
<b>TZ</b>	$\vartheta_z$ 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

### Change History

<b>Version</b>	<b>Date</b>	<b>Changes</b>	<b>Author</b>
<b>v1</b>	Nov 1999	initial suspension cabling	Ceccanti, Dattilo
<b>v2</b>	Oct 2008	Changes for putting the photodiodes under vacuum. Note: never deployed. It was left only a larger disk on F#7 bottom for clamping more cables	Berni, Dattilo, Gherardini
<b>v3r0</b>	Oct-Nov-Dec 2014	Cabling adaptation for AdV:	Berni, Dattilo, Gherardini

## 18 MOTORS

<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>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.F4</b>	fishing-rod on F#4	<b>E1</b>	STP, AWG24	
<b>MV.F7</b>	fishing-rod on F#7	<b>F1</b>	STP, AWG24	MV.3
<b>MH.F0.1</b>	trolley on inner structure	<b>I1</b>	STP, AWG24	MH.1
<b>MH.F0.2</b>	trolley on inner structure	<b>I2</b>	STP, AWG24	MH.2
<b>MH.F0.3</b>	trolley on inner structure	<b>I3</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.TZ</b>	balanc. mass on marion. (for $\vartheta_Z$ motion)	<b>T2</b>	PP, AWG24 PYRE-ML 0.6mm	MH.6
<b>MH.MA.TX</b>	balanc. mass on marion. (for $\vartheta_X$ motion)	<b>T3</b>	PP, AWG24 PYRE-ML 0.6mm	MH.7
<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	

## 3 PIEZOS

<b>code</b>	<b>Location</b> (refer to the drawings of the bench)	<b>vacuum cable ID</b>	<b>vacuum cable type</b>	<b>notes</b>
<b>PZ.BR.1</b>	IP foot	<b>P9</b>	STP, AWG24	S.N. 113010488
<b>PZ.BR.2</b>	IP foot	<b>P8</b>	STP, AWG24	S.N. 113010503
<b>PZ.BR.3</b>	IP foot	<b>P7</b>	STP, AWG24	S.N. 113010490

Total number of conductors for PIEZOs: 9.

Total STP for CLOSED-LOOP PIEZOs: 3.

## 21 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>
CH.F0.1 CH.F0.2 CH.F0.3	Safety frame ring		STP, AWG24	CH.1 CH.2 CH.3
CV.F0.1 CV.F0.2	crossbar on F#0 crossbar on F#0 (fish.rod side)	J2 J3	STP, AWG24	CV.1 CV.2
CV.F7.1 CV.F7.2 CV.F7.3 CV.F7.4 CH.F7.1 CH.F7.2 CH.F7.3 CH.F7.4	F#7 legs	S1 S3 S5 S7 S2 S4 S6 S8	STP, AWG24	CH.4 CH.5 CH.6 CH.7 CV.4 CV.5 CV.6 CV.7
CH.G.1 CH.G.2 CH.G.3 CH.G.4 CV.G.1 CV.G.2 CV.G.3 CV.G.4	ground		STP, AWG24	

## 6 THERMAL PROBES

<b>code</b>	<b>location</b>	<b>vacuum cable ID</b>	<b>vacuum cable type</b>	<b>notes</b>
T.F0.1 T.F0.2	antispring back on F#0	A3	STP, AWG24	TP.1
T.F4.1 T.F4.2	antispring back on F#4	E2	STP, AWG24	
T.F7.1 T.F7.2	antispring back on F#7	F2	STP, AWG24	TP.2

## 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>
<b>AH.F0.1</b>	top-ring		STP, AWG24	AH.1
<b>AH.F0.2</b>	top-ring		STP, AWG24	AH.2
<b>AH.F0.3</b>	top-ring		STP, AWG24	AH.3
<b>AV.F0.1</b>	crossbar F#0		STP, AWG24	AV.1
<b>AV.F0.2</b>	crossbar F#0 (fish.rod side)		STP, AWG24	AV.2

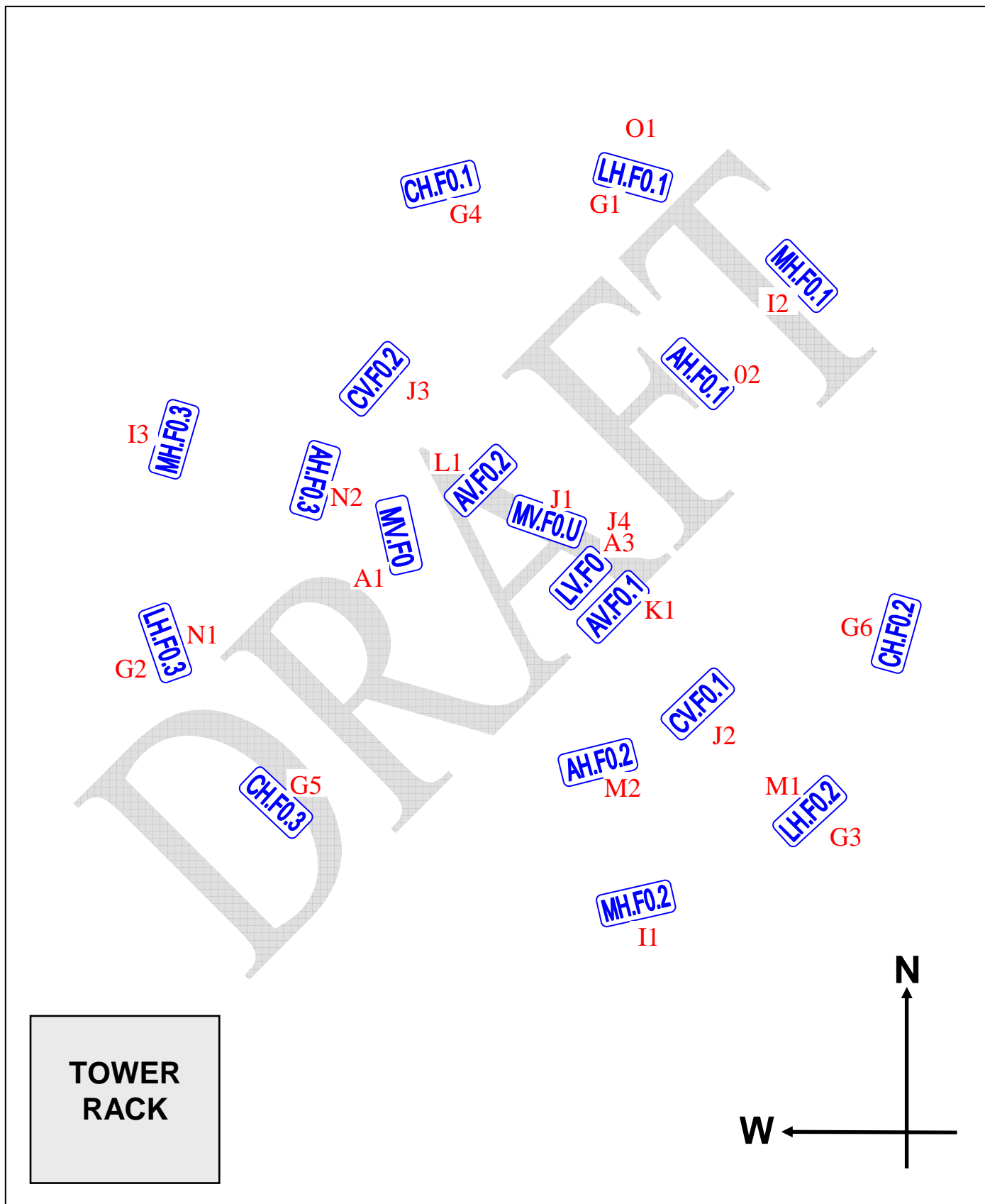
total number of conductors for accelerometers:  $5 \times 13 = 65$ , plus  $5 \times 5 = 25$  shields (motors included).

## 9 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>
<b>LH.F0.1</b>	Primary on top-ring Secondary on inner structure		STP, AWG24 STP, AWG24	LH.1
<b>LH.F0.2</b>	Primary on top-ring Secondary on inner structure		STP, AWG24 STP, AWG24	LH.2
<b>LH.F0.3</b>	Primary on top-ring Secondary on inner structure		STP, AWG24 STP, AWG24	LH.3
<b>LV.F0</b>	primary on F#0 crossbar secondary on F#0 body		STP, AWG24 STP, AWG24	LV.1
<b>LV.F4</b>	F#4		STP, AWG24 STP, AWG24	
<b>LV.F7</b>	F#7		STP, AWG24	LV.2
<b>LV.BR.1</b>	Primary on ground Secondary on IP foot		STP, AWG24	new (AdV)
<b>LV.BR.2</b>	Primary on ground Secondary on IP foot		STP, AWG24	new (AdV)
<b>LV.BR.3</b>	Primary on ground Secondary on IP foot		STP, AWG24	new (AdV)

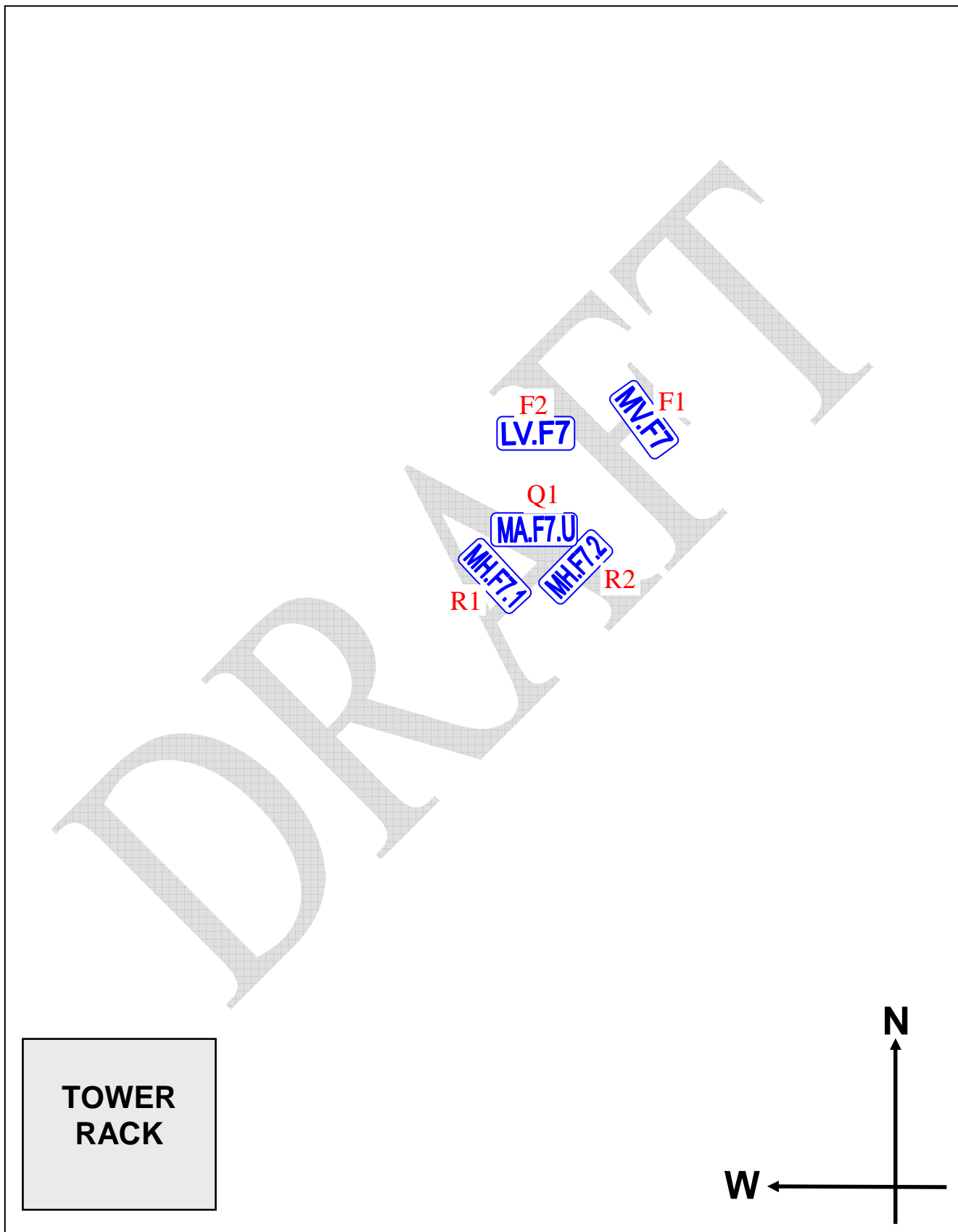
TOP-STAGE devices

top view



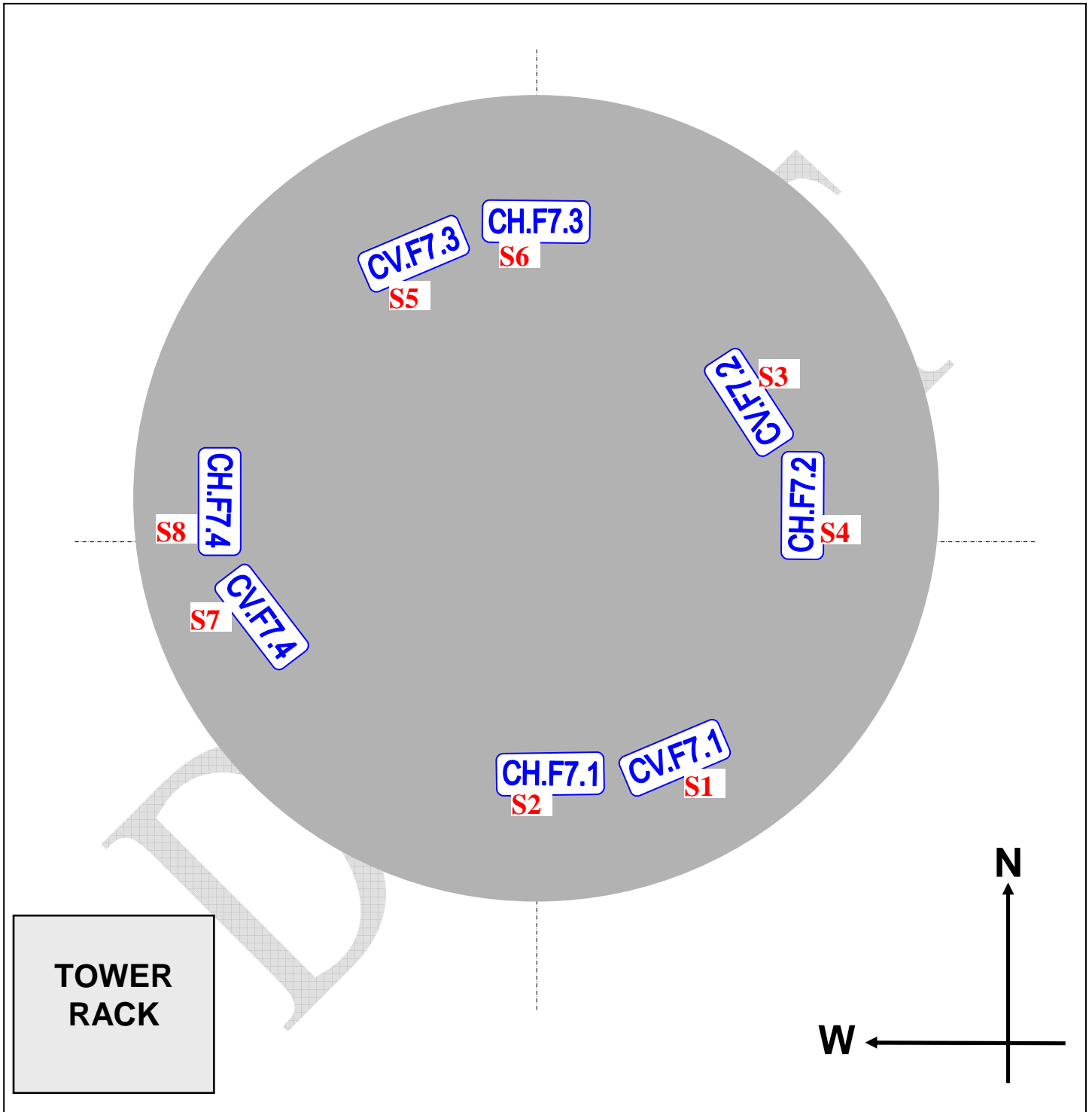
**FILTER #7 devices**

top view



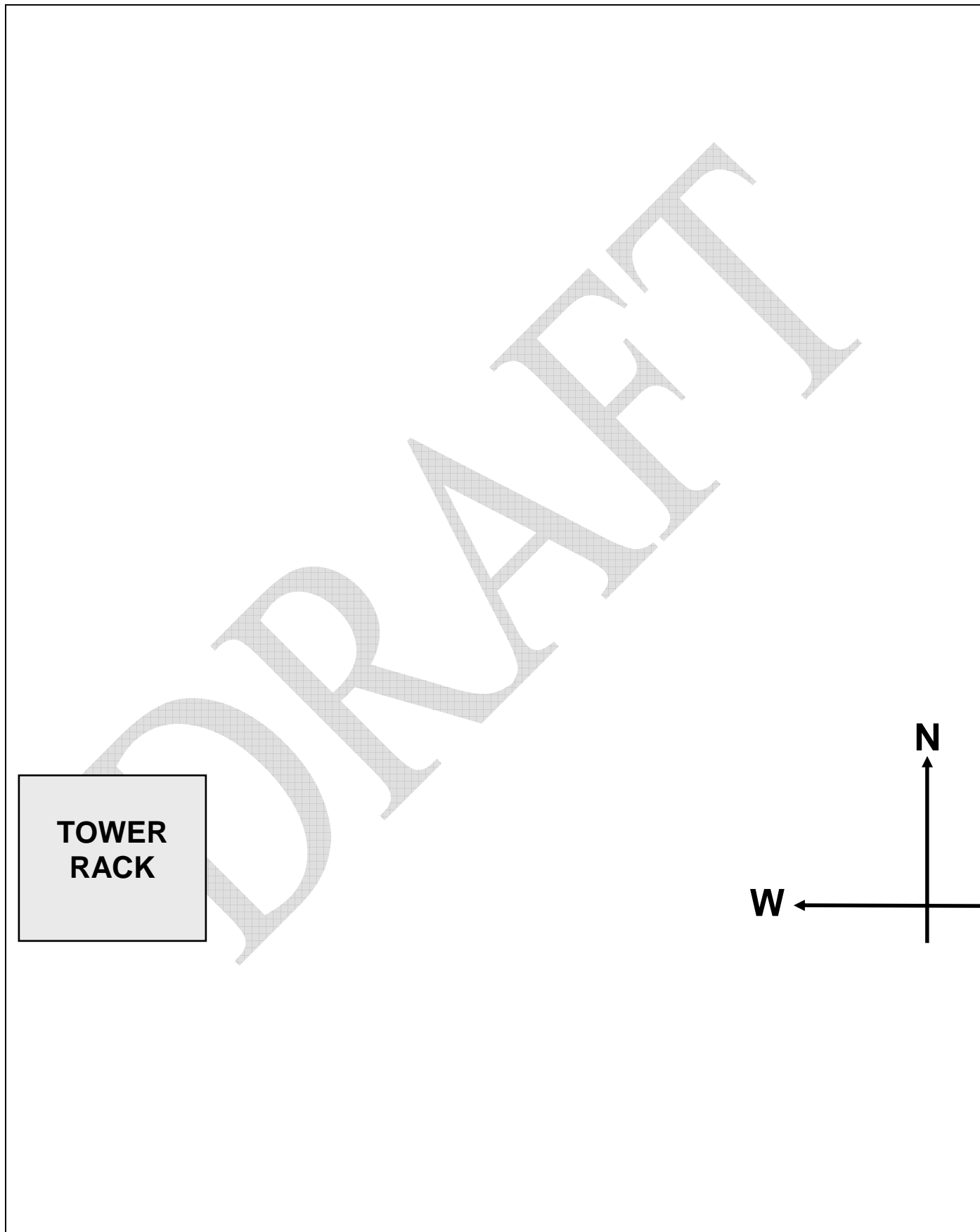
**FILTER #7 coils**

top view



Connector support on the marionette top

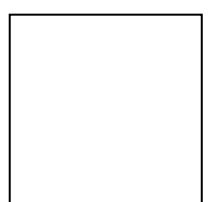
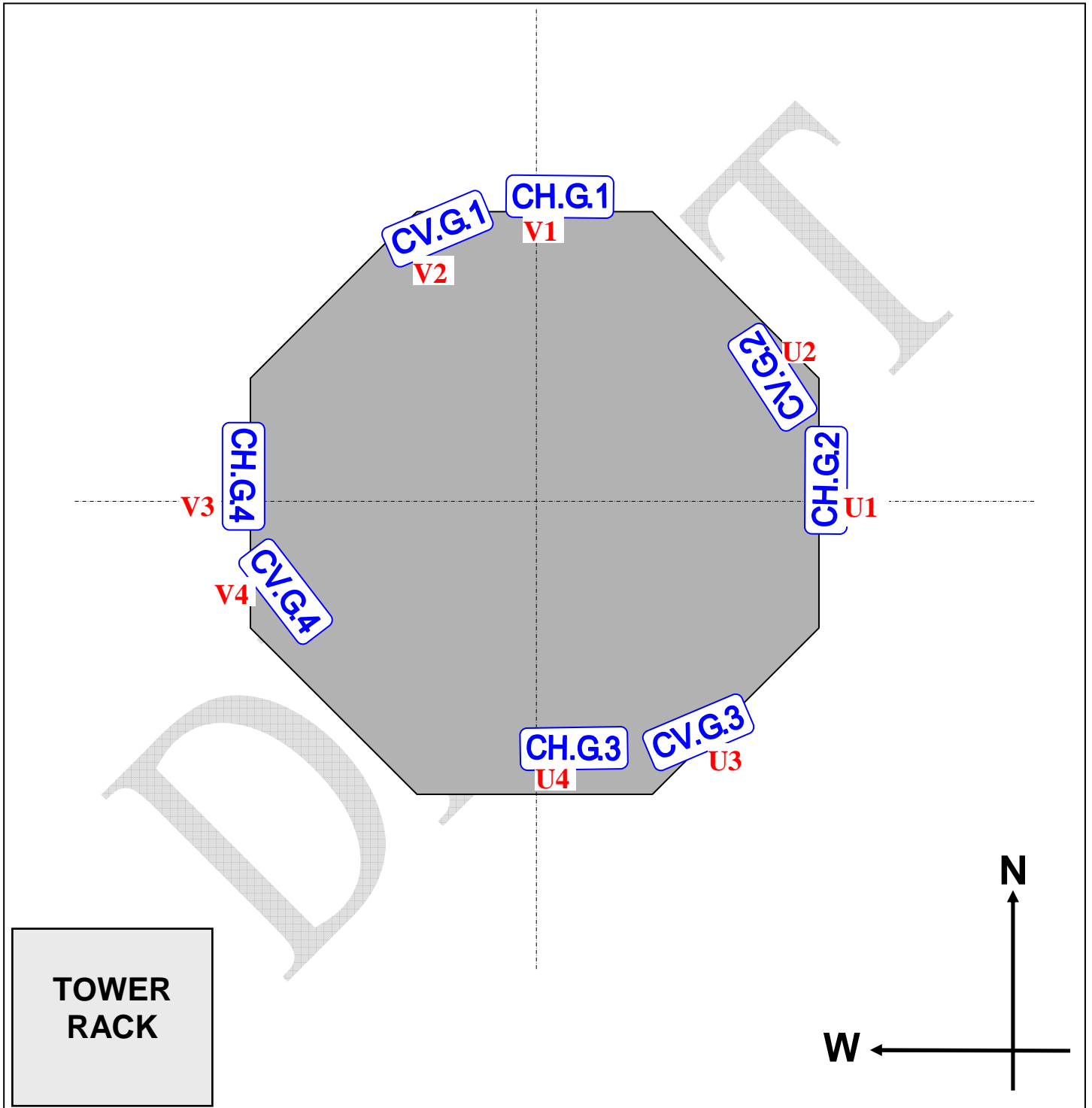
top view



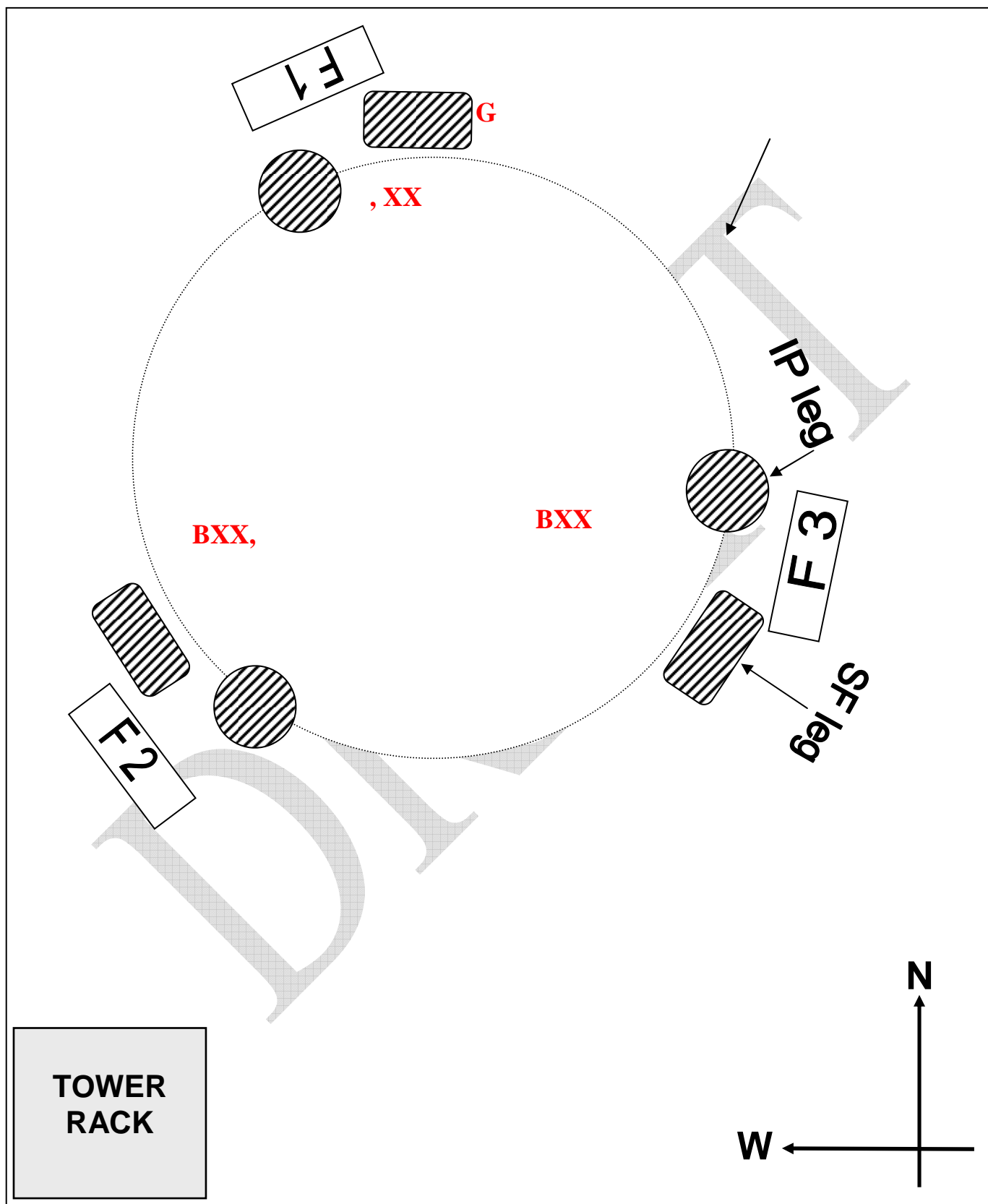


GROUND devices

top view

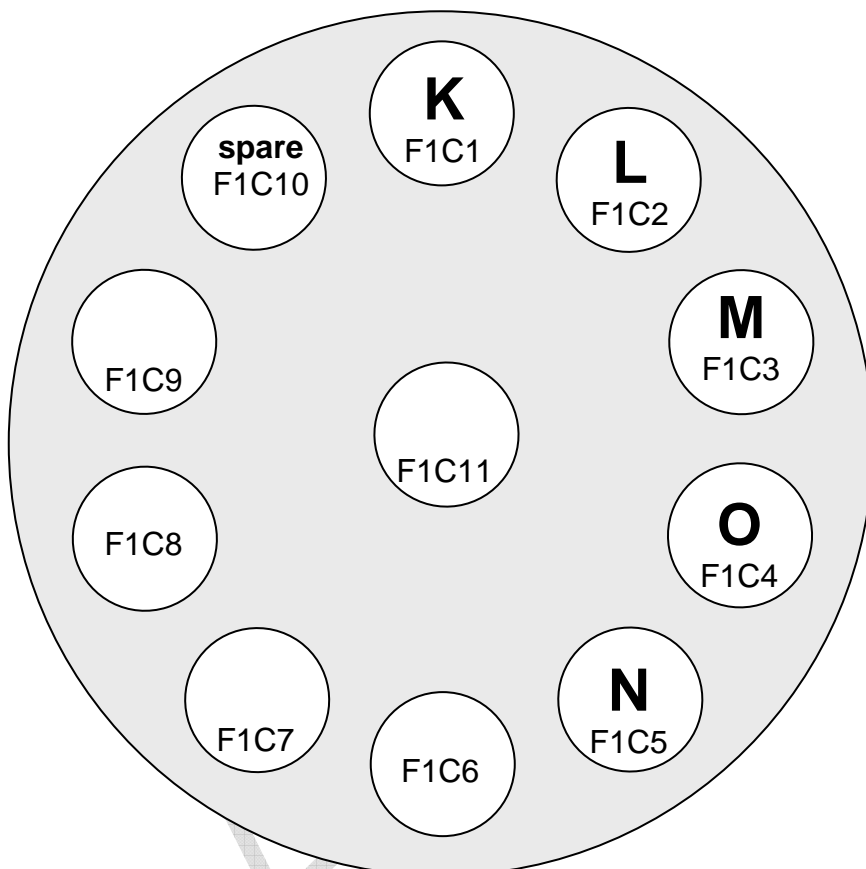


Cable arrangement along IP legs

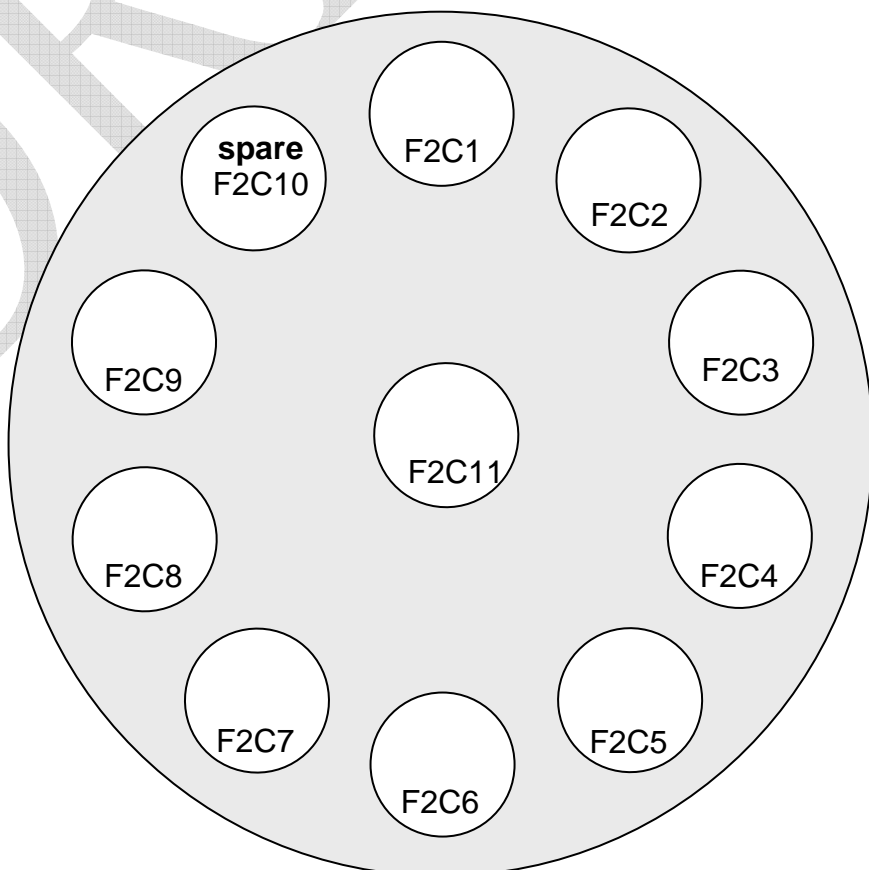


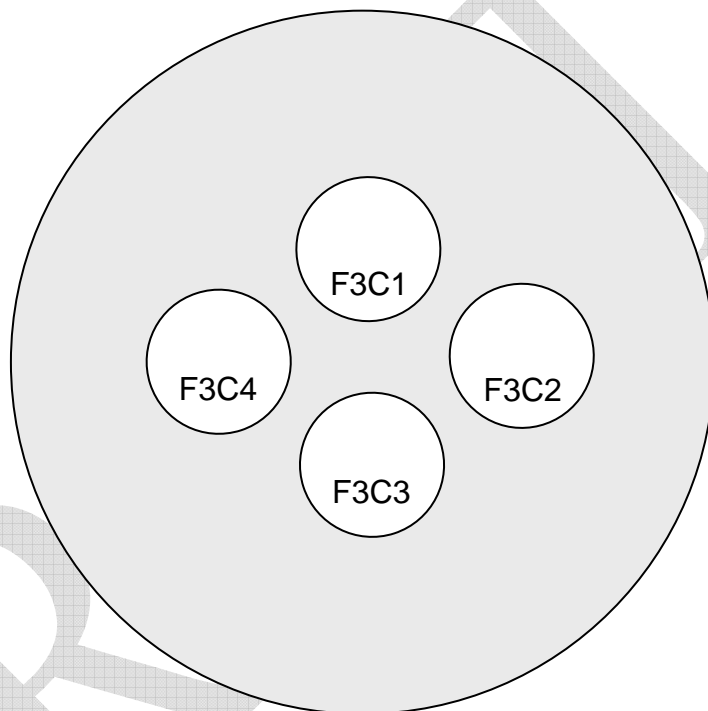
Connector location on flanges

Flange **F1**  
(air side view)



Flange **F2**  
(air side view)





**Feed-through location on the flange of the tower base****Flange F4**

(air side view)

It is located on the xx side, xx

(flange labeled "xx" by the manufacturer)

