NORTH END Tower:
location of electrically connected Devices

CODING CONVENTION: The code is divided in 3 fields. The field separator is a dot. The 3th 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)**

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

F0	Filter #0 or top-stage
F1	Filter #1
F2	Filter #2
F3	Filter #3
F4	Filter #4
F7	Filter #7
MA	Marionette
MI	Mirror

1, 2, 3, …	
L	Left
R	Right
U	Up
D	Down
F	Front
B	Back
UL	Up Left
UR	Up Right
DL	Down Left
DR	Down Right
FR	Front Back
BL	Bottom Left
LL	Lateral Left
LR	Lateral Rigth
TX	ϑ_X degree of freedom
TZ	ϑ_Z degree of freedom
AH1	Hor. Accelerom. #1
AH2	Hor. Accelerom. #2
AH3	Hor. Accelerom. #3

Change History

Version	*Date*	*Changes*	*Author*
		initial suspension cabling	Dattilo, Ceccanti, Nenci
	2003	added cabling of sensors and actuators on Filter #7	Dattilo, Nenci
v2	Dec 2010	Added cabling for internal CHRoCC (cables U and X) Added 2 temperature sensors close to the RefMass (cable U)	Berni, Dattilo, Gherardini
v3	May 2013	Modified cabling for allow new separating roof and new payload (cables F,R,S,T,V). Suppression of cables U and X. No more tiltmeters on F#7, more devices on payload and new F#7 actuation/sensing system.	Berni, Dattilo, Gherardini
v3r1	Oct 2013	Replaced cables T and W for the new F#7 actuation/sensing system, and moved to the small flange on the tower lower part.	Berni, Dattilo, Gherardini

21 MOTORS

code	***Location*** *(see also drawings in the following)*	***vacuum cable ID***	***vacuum cable type***	***notes***
MV.F0.U	top-screw on F#0	**J1**	STP, AWG24	MV.1 (old code)
MV.F0	fishing-rod on F#0	**A1**	STP, AWG24	MV.2
MV.F1	fishing-rod on F#1	**B1**	STP, AWG24	MV.3
MV.F2	fishing-rod on F#2	**C1**	STP, AWG24	MV.4
MV.F3	fishing-rod on F#3	**D1**	STP, AWG24	MV.5
MV.F4	fishing-rod on F#4	**E1**	STP, AWG24	MV.6
MV.F7	fishing-rod on F#7	**F1**	STP, AWG24	MV.7
MH.F0.1	trolley on inner structure	**H2**	STP, AWG24	MH.1
MH.F0.2	trolley on inner structure	**H3**	STP, AWG24	MH.2
MH.F0.3	trolley on inner structure	**H1**	STP, AWG24	MH.3
MH.F7.TZ	balancing mass on F#7	**R3**	STP, AWG24	MH.4
MH.F7.TX	balancing mass on F#7	**R2**	STP, AWG24	MH.5
MH.MA.TZ	balanc. mass on marion. (for ϑ_Z motion)	**V2**		
MH.MA.TX	balanc. mass on marion. (for ϑ_x motion)	**V3**		
MA.F7.U	F#7 top (for rotation)	**R1**	STP, AWG24	MA.1
MA.F7.D	F#7 bottom (for rotation)	**F4**	STP, AWG24	MA.2
M.F0.AH1	Hor. Accelerometer on top-stage	**O2**	STP, AWG24	
M.F0.AH2	Hor. Accelerometer on top-stage	**M2**	STP, AWG24	
M.F0.AH3	Hor. Accelerometer on top-stage	**N2**	STP, AWG24	
M.F0.AV1	Vert. Accelerometer on F#0	**K1**	STP, AWG24	
M.F0.AV2	Vert. Accelerometer on F#0	**L1**	STP, AWG24	

23 COILS

code	*Location* *(see also drawings in the following)*	*vacuum cable ID*	*vacuum cable type*	*notes*
CH.F0.1 **CH.F0.2** **CH.F0.3**	Safety frame ring	**G4** **G6** **G2**	STP, AWG24 (double)	CH.1 CH.2 CH.3
CV.F0.1 **CV.F0.2**	crossbar on F#0 crossbar on F#0 (fish.rod side)	**J3** **J2**	STP, AWG24	CV.1 CV.2
CH.F7.1	Coil on bottom ring, magnet on F#7	**W1**	TP, ∅0.6mm, enamel insulat.	coil shared with LH.F7.1 secondary
CH.F7.2	Coil on bottom ring, magnet on F#7	**W2**	TP, ∅0.6mm, enamel insulat	coil shared with LH.F7.2 secondary
CH.F7.3	Coil on bottom ring, magnet on F#7	**W3**	TP, ∅0.6mm, enamel insulat	coil shared with LH.F7.3 secondary
CV.F7.1	Coil on bottom ring, magnet on F#7	**W4**	TP, ∅0.6mm, enamel insulat	coil shared with LV.F7.1 secondary
CV.F7.2	Coil on bottom ring, magnet on F#7	**W5**	TP, ∅0.6mm, enamel insulat	coil shared with LV.F7.2 secondary
CV.F7.3	Coil on bottom ring, magnet on F#7	**W6**	TP, ∅0.6mm, enamel insulat	coil shared with LV.F7.3 secondary
CV.MA.B **CV.MA.L** **CH.MA.BL** **CH.MA.FR** **CV.MA.F** **CV.MA.R** **CH.MA.BR** **CH.MA.FL**	coils on F#7 lower frame (cage), magnets on Marionette	**cable S** (see details on NE_LastStageCabling file)		
CH.MI.UR **CH.MI.DR** **CH.MI.UL** **CH.MI.DL**	coils on F#7 lower frame (cage), magnets on Mirror	**cable V** (see details on NE_LastStageCabling file)		

total number of conductors for coils: 23x2=48, plus 23 shields.

6 (couples of) THERMAL PROBES

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

total number of conductors for thermal probes: 6x4=24, plus 6X2=12 shields.

5 ACCELEROMETERS

code	*Location* *(see also drawings in the following)*	*vacuum cable ID*	*vacuum cable type*	*notes*
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: 5x13=65, plus 5X5=25 shields (motors included).

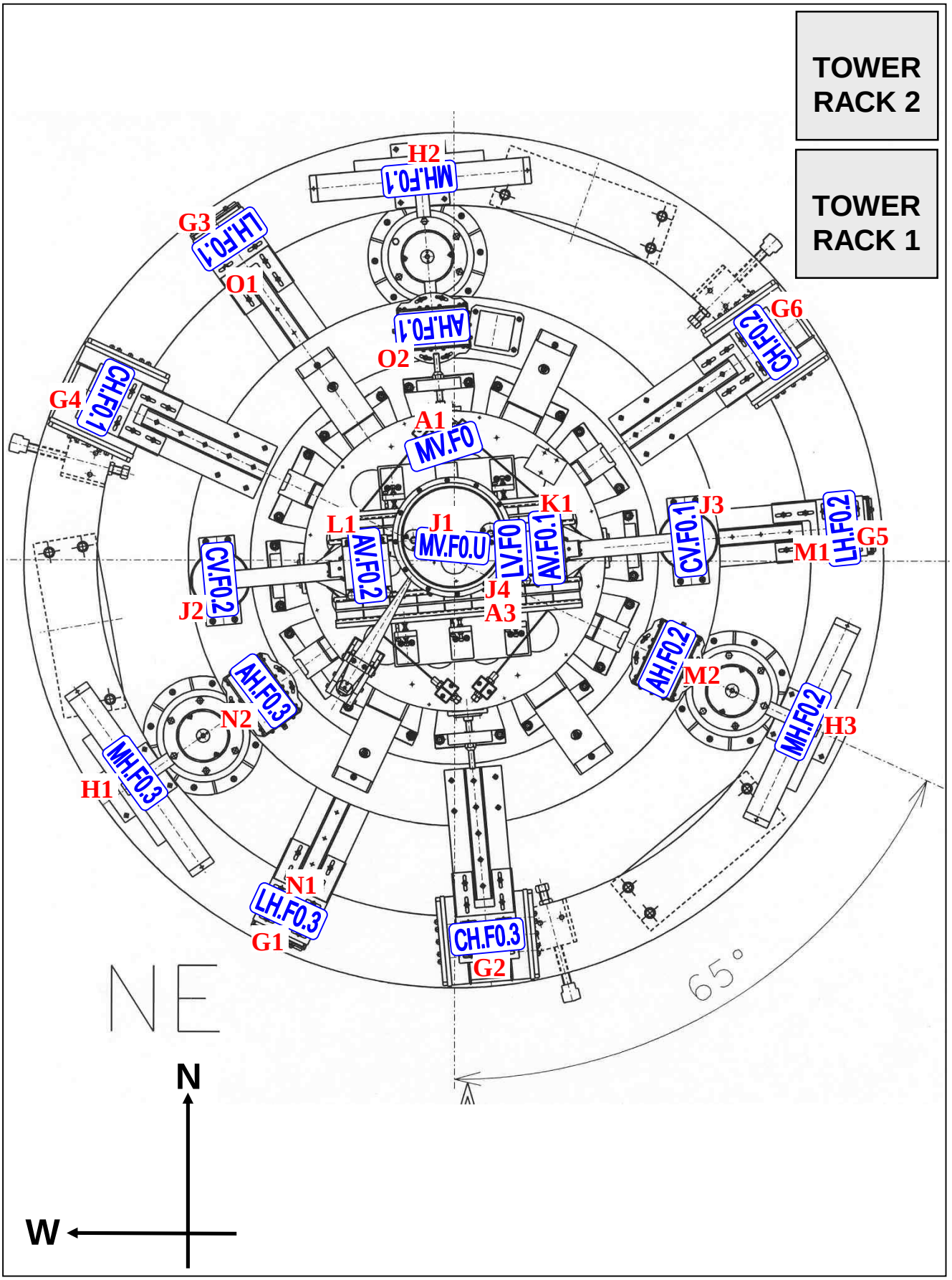
15 LVDTs

code	***Location*** *(see also drawings in the following)*	***vacuum cable ID***	***vacuum cable type***	***notes***
LH.F0.1	Primary on top-ring Secondary on inner structure	**O1** **G3**	STP, AWG24 STP, AWG24	 LH.1
LH.F0.2	Primary on top-ring Secondary on inner structure	**M1** **G5**	STP, AWG24 STP, AWG24	 LH.2
LH.F0.3	Primary on top-ring Secondary on inner structure	**N1** **G1**	STP, AWG24 STP, AWG24	 LH.3
LV.F0	primary on F#0 crossbar secondary on F#0 body	**J4** **A3**	STP, AWG24 STP, AWG24	 LV.1
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 and Secondary on bottom ring, ferrites on F#7	**T1** **W1**	TP, ∅0.6mm, enamel insulat.	coil shared with CH.F7.1
LH.F7.2	Primary and Secondary on bottom ring, ferrites on F#7	**T2** **W2**	TP, ∅0.6mm, enamel insulat	coil shared with CH.F7.2
LH.F7.3	Primary and Secondary on bottom ring, ferrites on F#7	**T3** **W3**	TP, ∅0.6mm, enamel insulat	coil shared with CH.F7.3
LV.F7.1	Primary and Secondary on bottom ring, ferrites on F#7	**T4** **W4**	TP, ∅0.6mm, enamel insulat	coil shared with CV.F7.1
LV.F7.2	Primary and Secondary on bottom ring, ferrites on F#7	**T5** **W5**	TP, ∅0.6mm, enamel insulat	coil shared with CV.F7.2
LV.F7.3	Primary and Secondary on bottom ring, ferrites on F#7	**T6** **W6**	TP, ∅0.6mm, enamel insulat	coil shared with CV.F7.3

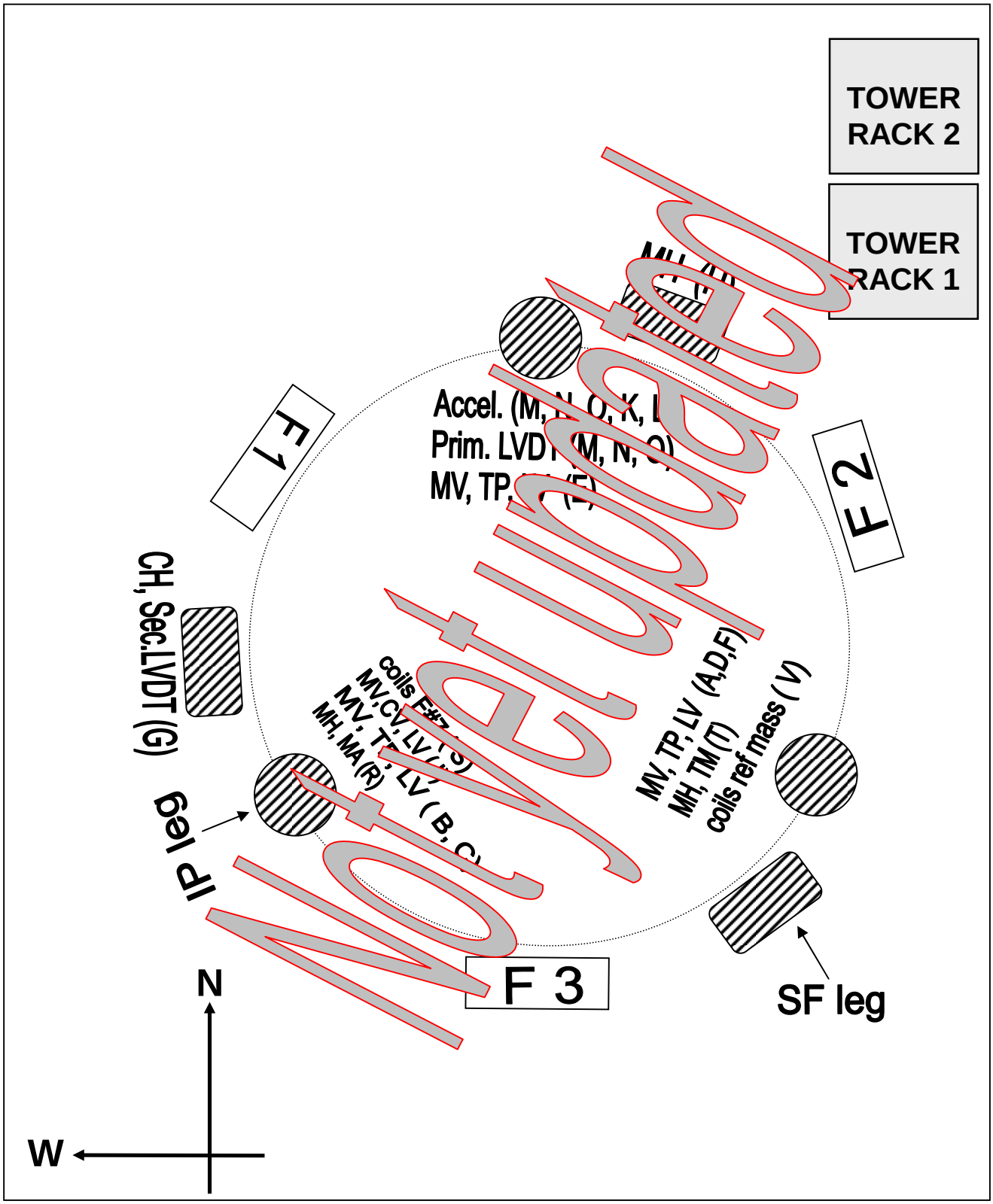
total number of conductors for LVDTs: 15x4=60, plus 15X2=30 shields.

F#0 / TOP-STAGE devices

top view

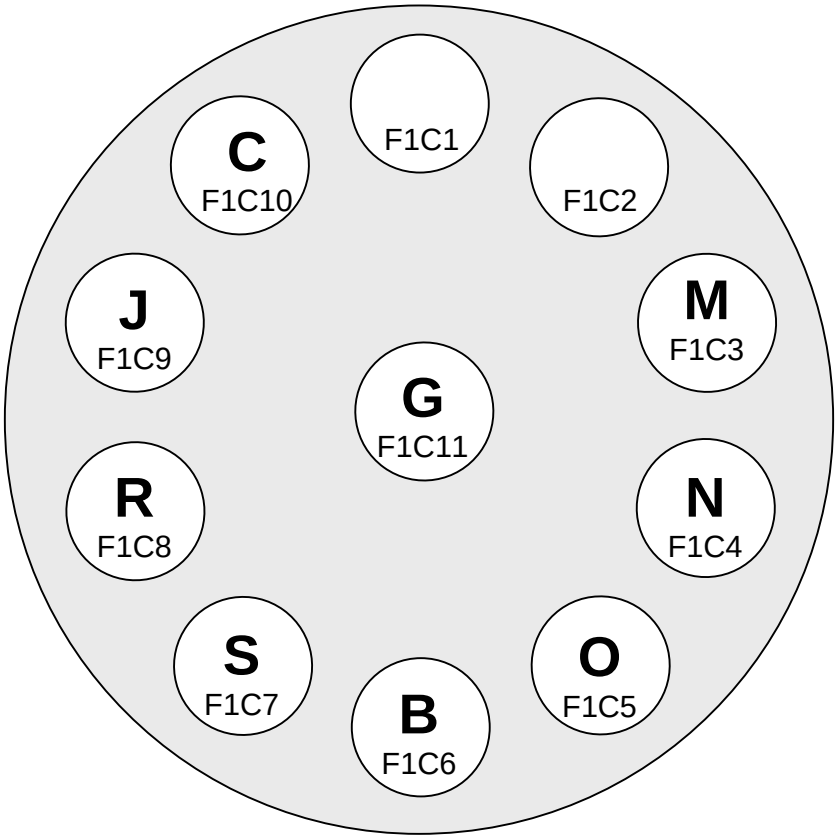


Cable arrangement along inverted pendulum (IP) legs and safety structure (SF) legs

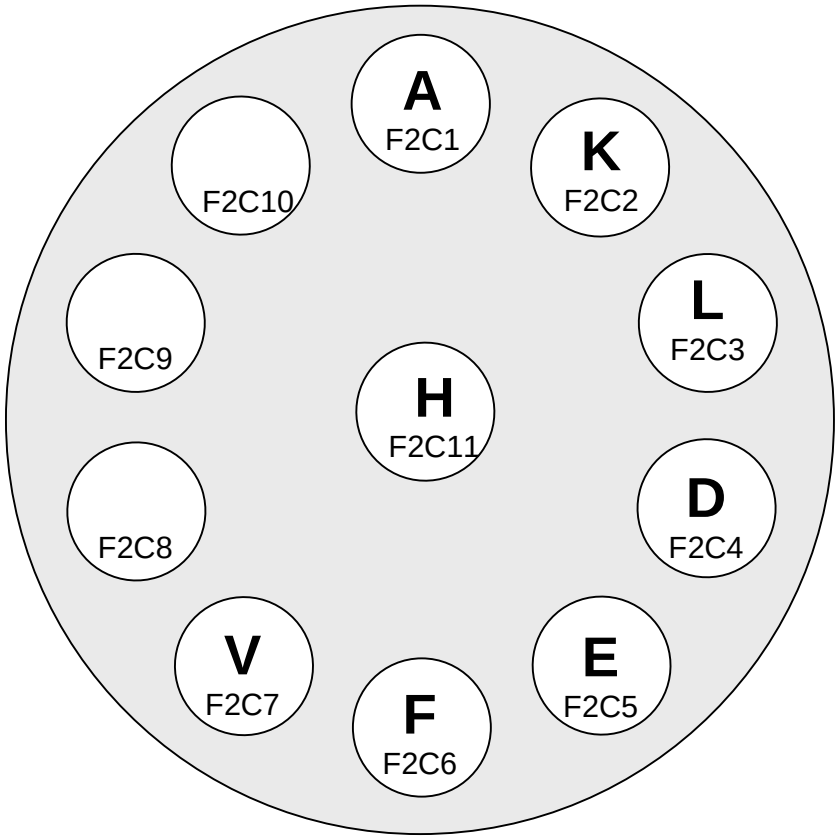


Feed-through location on flanges of the Technical Ring

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 W side, down-left