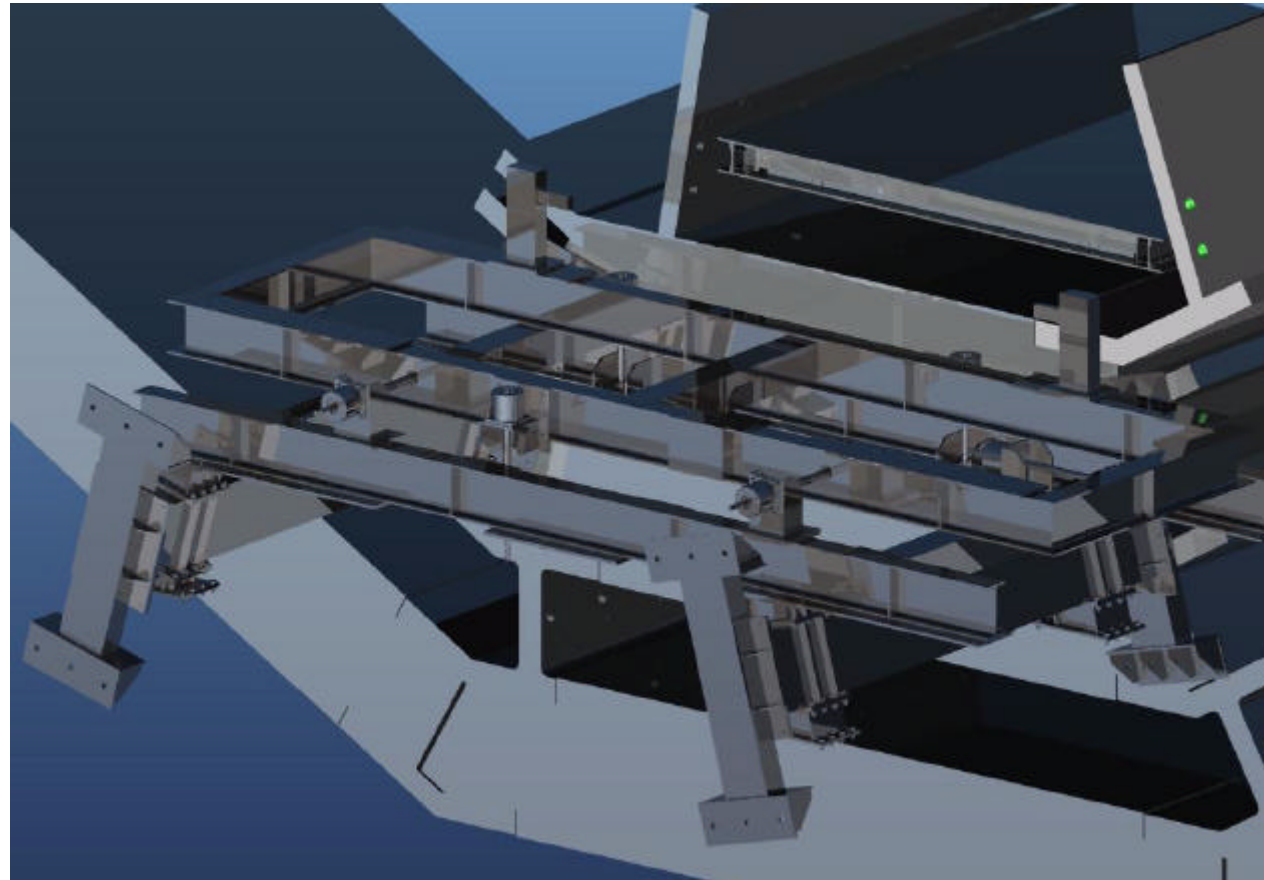
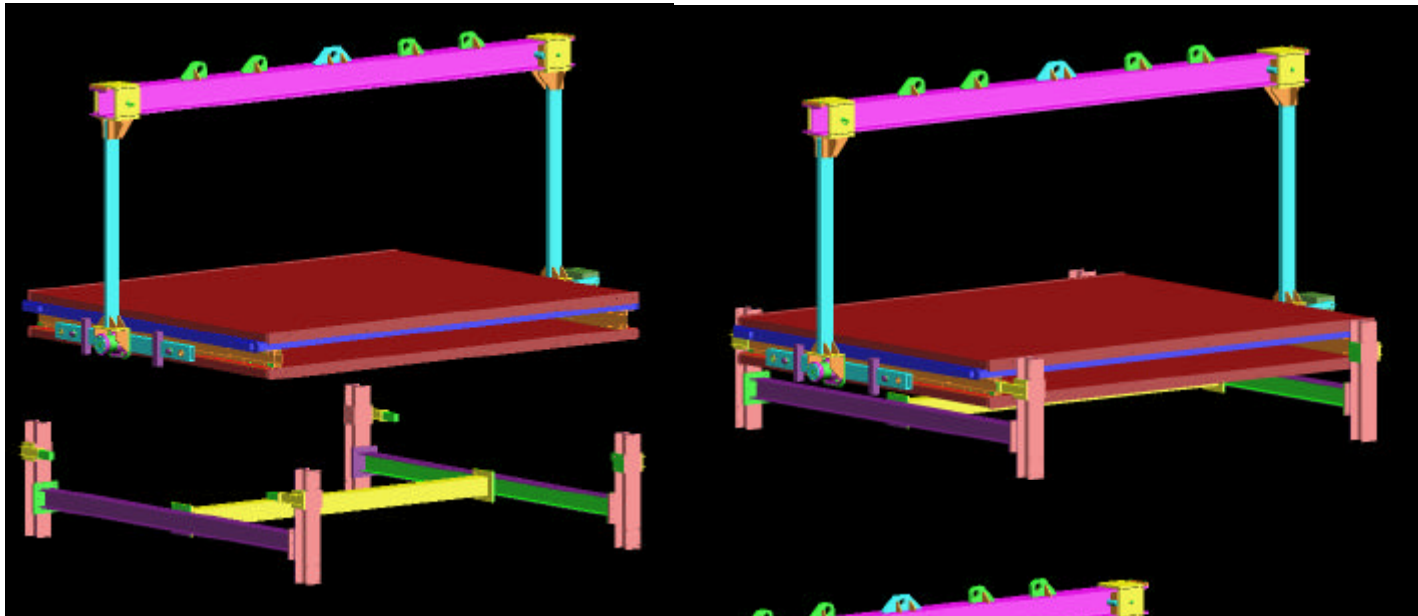


# Installation



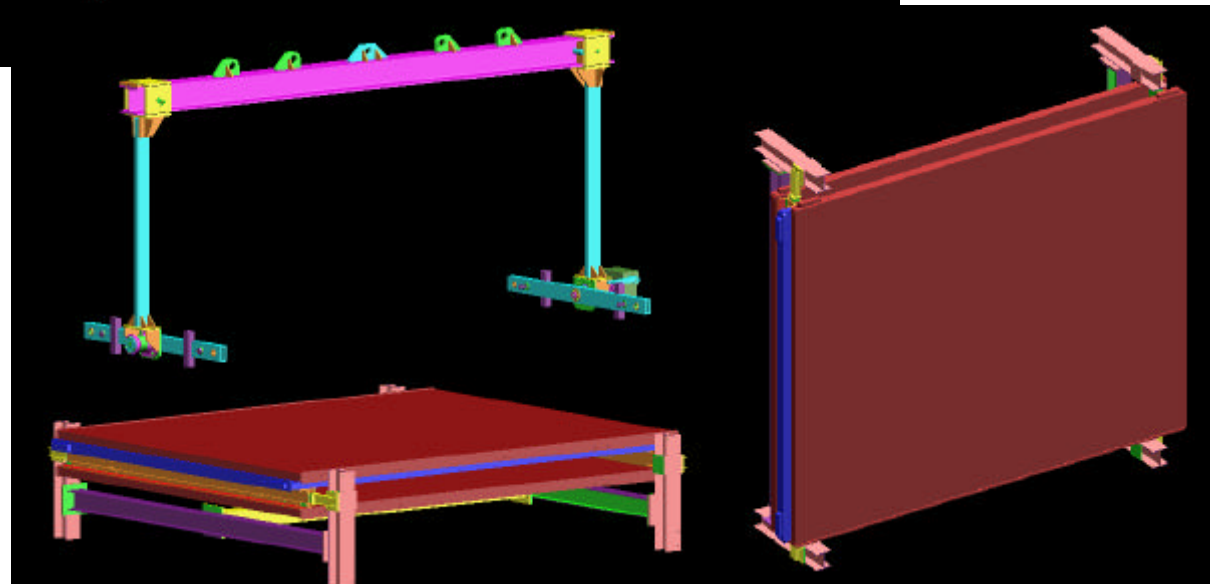
**DT + RPCs transport to P5**  
**DT + RPCs handling and insertion in the installation tool**  
**handling of installation frame (rotation, movements)**  
**fixing/removal of installation frame**



## Transport to P5

DT+RPCs supported by frame supporting the chamber from front support points; can stand vertically;

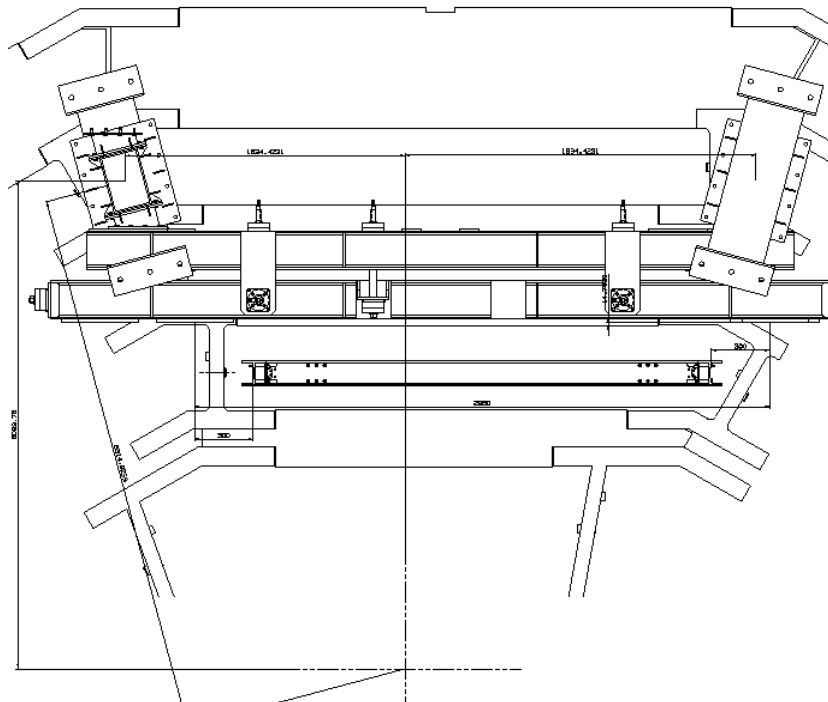
MB3 and MB4, could be moved to P5 laying down (width > 2.5 m).



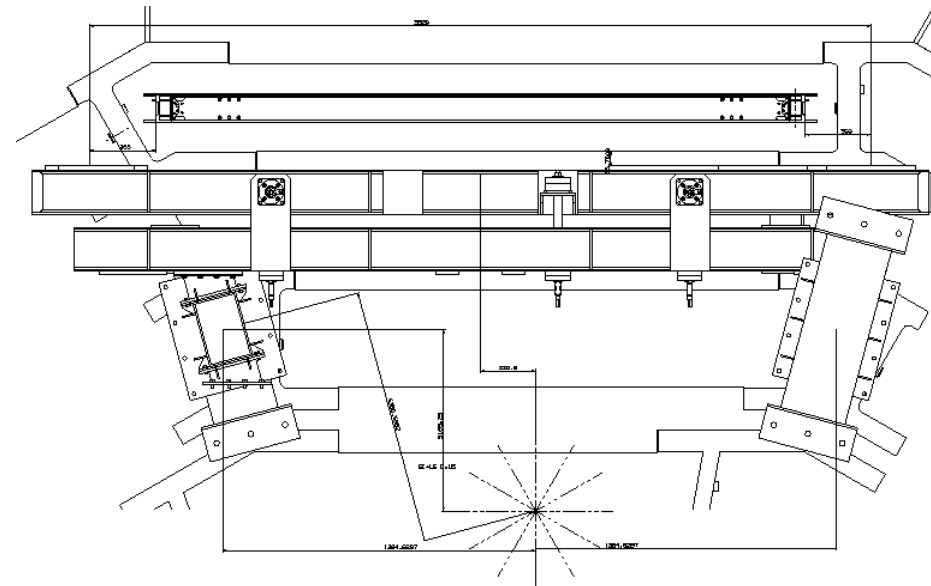
# Installation tools.

For a given chamber to be installed: setup of the installation tool settled accordingly

## MB/W/2/S



## MB/W/3/S



# 1) Interface pads.

Fixed to the M30 holes.

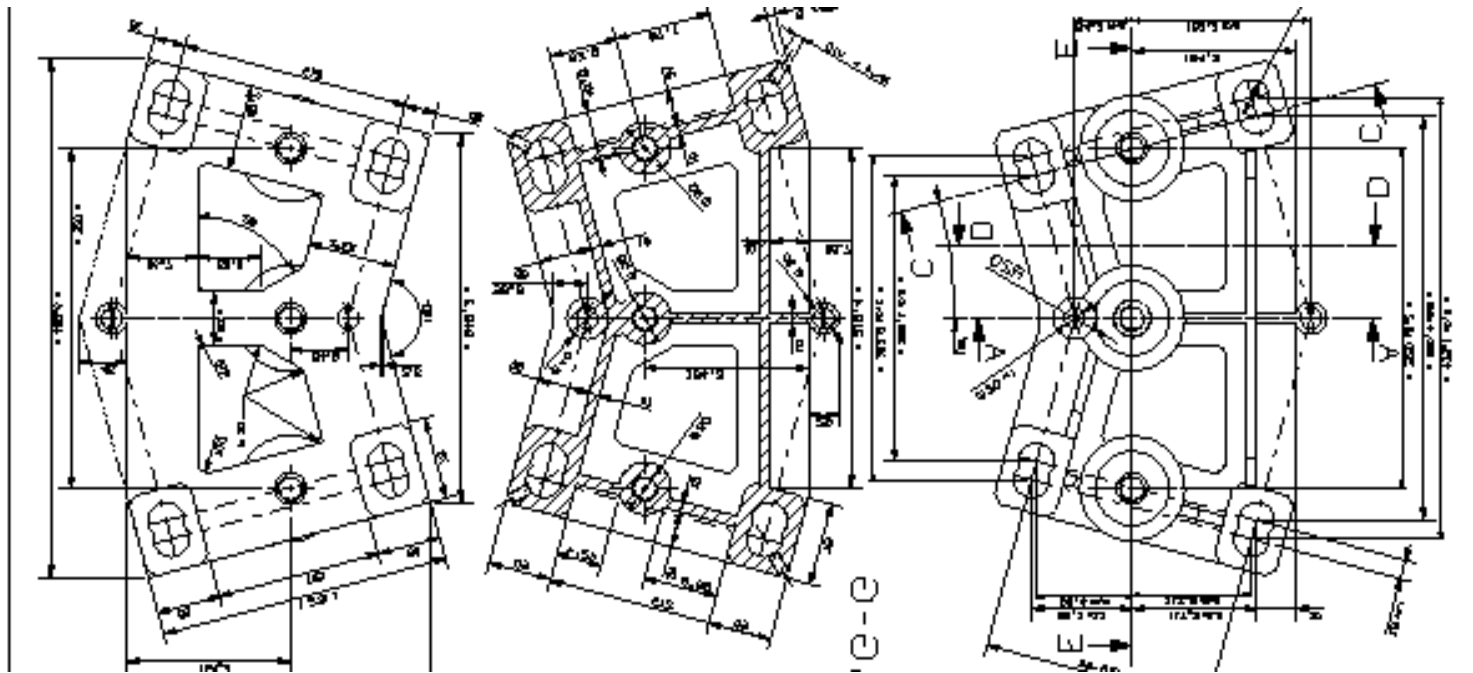
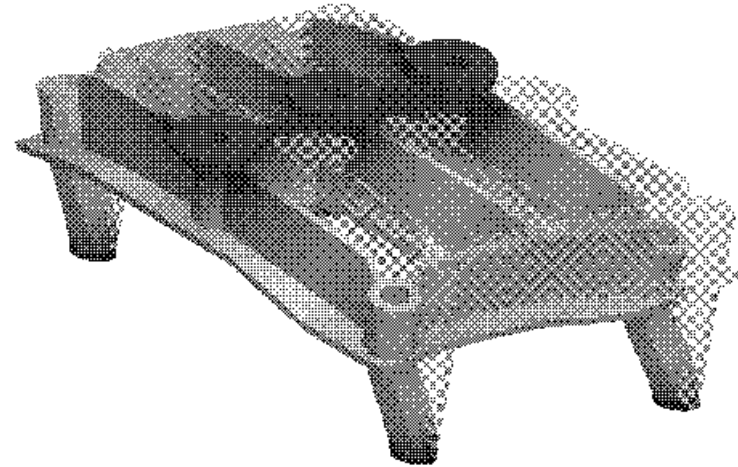
Weight: 30 to 45 daN.

Type YB1: compatible with Z-stops, not to be removed.

Types YB2 and YB3: need 60 mm free diameter around tapped holes.

FEA analysis performed, worst case MB4/4 and MB4/10

Status: ORDERED



## 2) Cradle structure.

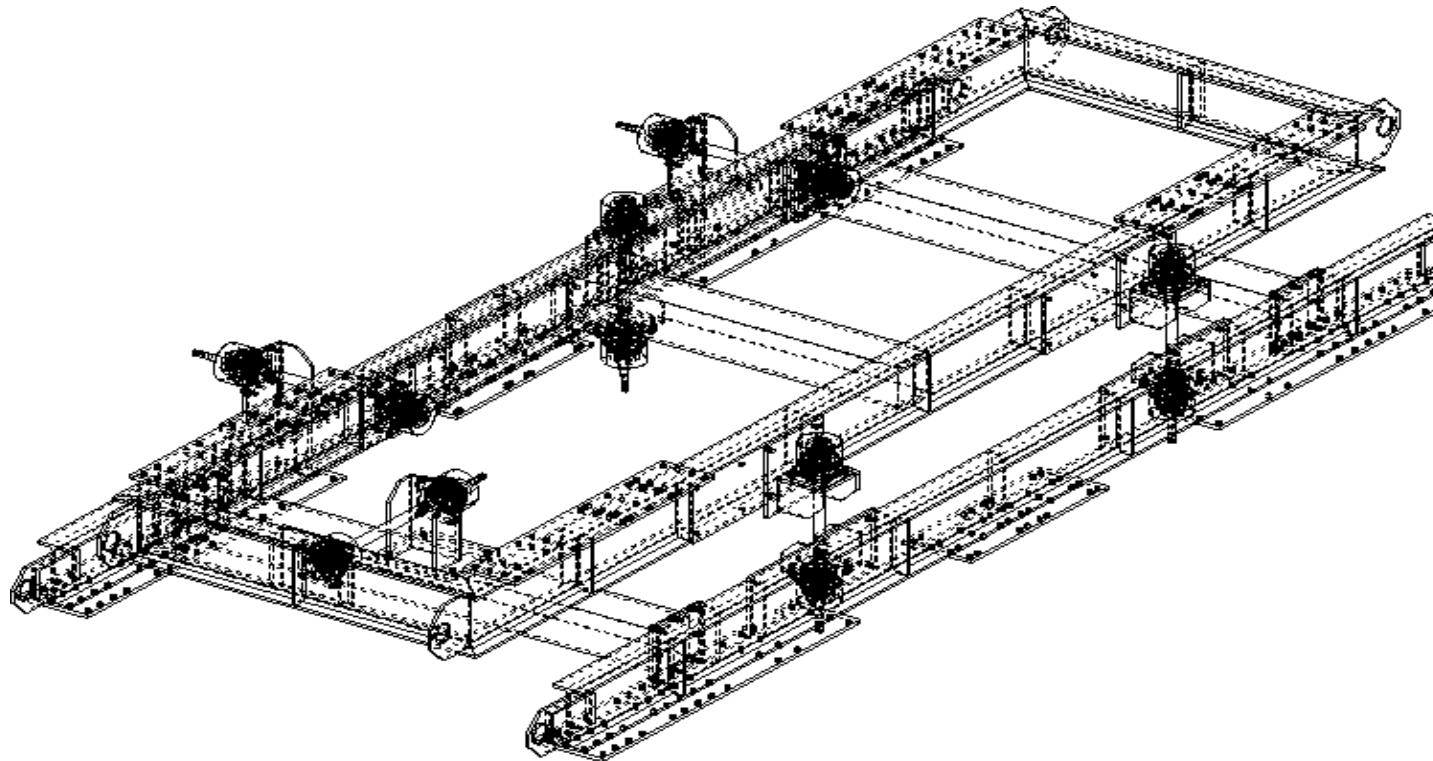
### 2.1) Cradle platform.

composed by external frame and internal platform (adjustable position).

Large size : MB1, MB2, MB3, MB4/4, MB4/10, MB4/9,11

Extra Large size : MB4 and MB4/8,12 (optional MB4/4 and MB3)

Status: OFFERS received, still finalizing working drawings

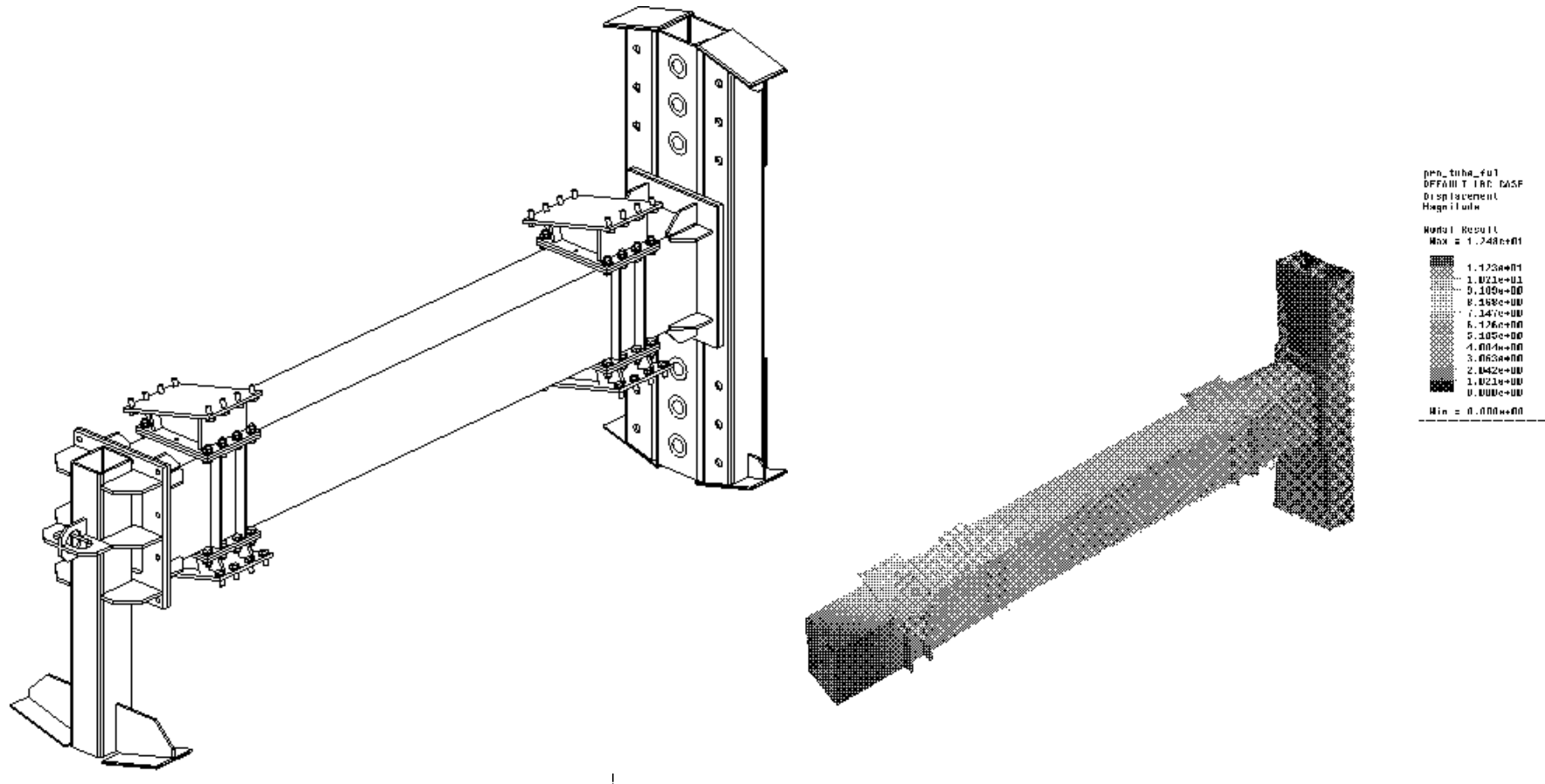


## 2.2) Main cantilever arms.

FEA analysis performed, worst case MB4/4 and MB4/10

Status: ORDERED

Delivery expected by end of April.

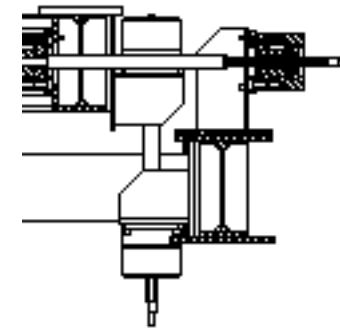


## 2.3) Ancillary parts

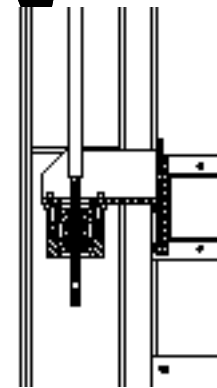
Small parts for adjustable connections

Status: some parts in production @ home, other being ordered

Delivery expected by end of April.



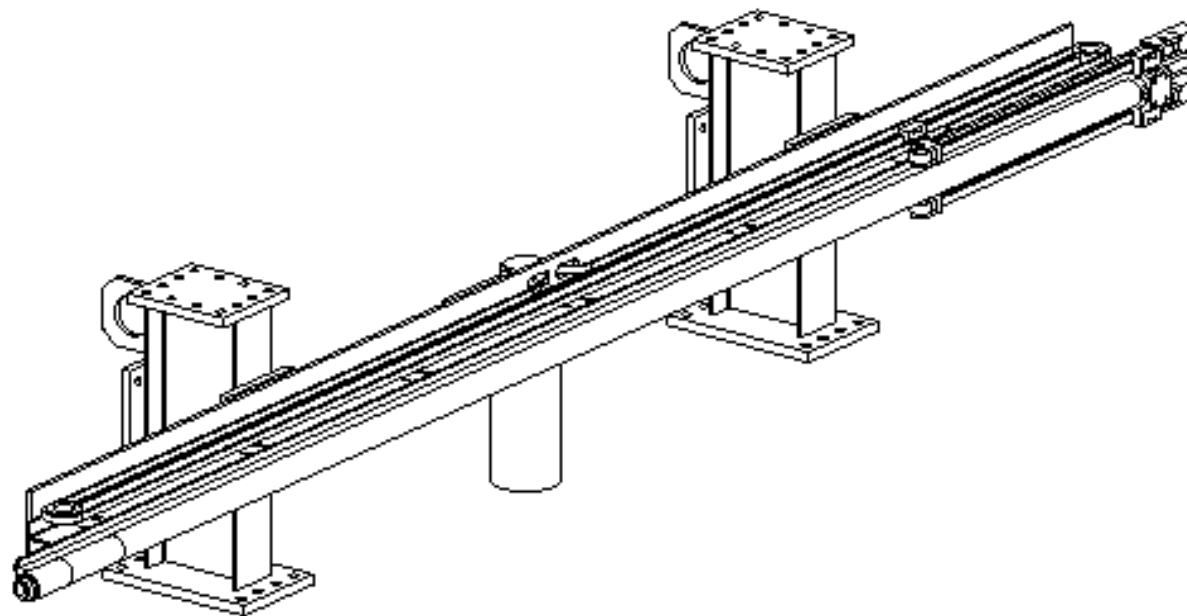
SECTION A



## 2.4) Rails support structures

Structures lodging the extension rails and the pushing/pulling mechanism.

Status: working drawings in progress



### 3) Cradle rotation on an horizontal axis.

Tooling for rotation available at P5. Can be used?

### 4) Scissor platform:

L3 scissors lift is available:

- max load 10 000kg;
- length 4.5 m;
- width 1.6 m;
- height 0.9 m (retracted);
- maximum height: 3.7m;
- stroke: 2.8m

Air pads for horizontal movements,  
to be checked if compatible w.r.t. the  
floor at P5.

Needs restoration.

### 5) Frame

on top of the scissor lift to  
keep the cradle inclined at given angle.





MBDT Installation Cradle

ID	Task Name	Duration	Start	Finish	Predecessor:	August	September	October	November	December	January	February	March	April	May	June	July
						Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
1	<b>Interface pads</b>	<b>102 days</b>	<b>Tue 11/13/01</b>	<b>Fri 4/12/02</b>													
2	Interface pads design	40 days	Tue 11/13/01	Wed 1/16/02													
3	Interface pads offers and order	15 days	Thu 1/17/02	Wed 2/6/02	2												
4	Interface pads construction	35 days	Thu 2/7/02	Wed 3/27/02	3												
5	Interface pads check and validation	2 days	Thu 3/28/02	Fri 3/29/02	4												
6	Interface pads transport to CERN	10 days	Mon 4/1/02	Fri 4/12/02	5												
7																	
8	<b>Main support beams</b>	<b>179 days</b>	<b>Wed 9/12/01</b>	<b>Fri 5/31/02</b>													
9	Main support beam - design	65 days	Wed 9/12/01	Thu 12/13/01													
10	Main support beam - offers and order	30 days	Fri 12/14/01	Mon 2/4/02	9												
11	Main support beam - design finalizing	30 days	Tue 2/5/02	Mon 3/18/02	10												
12	Main support beam - construction	45 days	Tue 3/19/02	Mon 5/20/02	11												
13	Main supp. beam - check, validation	2 days	Tue 5/21/02	Wed 5/22/02	12												
14	Main support beam - interface arm - design	125 days	Thu 9/20/01	Tue 3/26/02													
15	Main support beam - interface arm - offers and order	10 days	Wed 3/27/02	Tue 4/9/02	14												
16	Main support beam - interface arm - construction	35 days	Wed 4/10/02	Tue 5/28/02	15												
17	Main support beam - interface arm - check and validation	2 days	Wed 5/29/02	Thu 5/30/02	16												
18	Main support beam and interface arm - assembly and test	1 day	Fri 5/31/02	Fri 5/31/02	17,13												
19																	
20	<b>Main frame beams MB1 to MB3 size</b>	<b>179 days</b>	<b>Wed 9/12/01</b>	<b>Fri 5/31/02</b>													
21	Main frame beam - design	125 days	Wed 9/12/01	Mon 3/18/02													
22	Main frame beam - offers and order	10 days	Tue 3/19/02	Mon 4/1/02	21												
23	Main frame beam - construction	40 days	Tue 4/2/02	Mon 5/27/02	22												
24	Main frame beam - check, validation	2 days	Tue 5/28/02	Wed 5/29/02	23												
25	Main frame beam - assembly and test	2 days	Thu 5/30/02	Fri 5/31/02	24												
26																	
27	<b>Main platform MB1 to MB3 size</b>	<b>179 days</b>	<b>Wed 9/12/01</b>	<b>Fri 5/31/02</b>													
28	Main platform - design	125 days	Wed 9/12/01	Mon 3/18/02													
29	Main platform - offers and order	10 days	Tue 3/19/02	Mon 4/1/02	28												
30	Main platform - construction	40 days	Tue 4/2/02	Mon 5/27/02	29												
31	Main platform - check, validation	2 days	Tue 5/28/02	Wed 5/29/02	30												
32	Main platform - assembly and test	2 days	Thu 5/30/02	Fri 5/31/02	31												
33																	
34	<b>Extension rails support structures</b>	<b>180 days</b>	<b>Mon 10/8/01</b>	<b>Thu 6/27/02</b>													
35	extension rails support structures rails struct - design	115 days	Mon 10/8/01	Thu 3/28/02													
36	extension rails support structures - offers and orders	10 days	Fri 3/29/02	Thu 4/11/02	35												
37	extension rails support structures - construction	30 days	Fri 4/12/02	Thu 5/23/02	36												
38	extension rails support structures - check, validation	2 days	Fri 5/24/02	Mon 5/27/02	37												
39	extension rails support structures - assembly and test	4 days	Tue 5/28/02	Fri 5/31/02	38												
40																	
41	<b>Adjusting screws, bearings, small parts</b>	<b>155 days</b>	<b>Wed 11/14/01</b>	<b>Thu 6/27/02</b>													
42	design	85 days	Wed 11/14/01	Thu 3/21/02													
43	offers and orders	15 days	Fri 3/22/02	Thu 4/11/02	42												
44	construction	30 days	Fri 4/12/02	Thu 5/23/02	43												
45	check, validation	2 days	Fri 5/24/02	Mon 5/27/02	44												
46	assembly and test	2 days	Tue 5/28/02	Wed 5/29/02	45												
47																	
48	<b>Installation test</b>	<b>19 days</b>	<b>Mon 6/3/02</b>	<b>Thu 6/27/02</b>													
49	Cradle transport to CERN	10 days	Mon 6/3/02	Fri 6/14/02	18,6,32,25,46												
50	Reassembly & setup	1 day	Mon 6/17/02	Mon 6/17/02	49												
51	Cradle handling/fixing test without chamber	2 days	Tue 6/18/02	Wed 6/19/02	50												
52	Rails structs and mechanism - mounting and test	2 days	Thu 6/20/02	Fri 6/21/02	51												
53	Cradle test with chamber	2 days	Mon 6/24/02	Tue 6/25/02	52												
54	1st DT Installed in CMS barrel	2 days	Wed 6/26/02	Thu 6/27/02	53												

Project: Project1  
Date: Wed 3/6/02

Task		Milestone		Rolled Up Task		Rolled Up Progress		External Tasks		Group By Summary	
Progress		Summary		Rolled Up Milestone		Split		Project Summary			