This RPC parameter book has been updated on September 27 2002 and is based on the MDT Barrel layout Version Q. The only change with respect to layout P is for RPCs in BOS feet chambers (BOF7A, BOG8A, BOF7C, BOF8C) for which a new standard RPC Unit (BOS-A) has been introduced. All information contained is up to date (although some are not final)

It contains 9 worksheets (“Read me first”, “Parameters”, “BOL”, “BML”, “BOS”, “BMS”, “BOS feet”, “BMS feet” , “Standard unit's details”, “Special unit’s details”).

The "Parameters" worksheet contains constants which are used for automatic calculations of some of the values included in the "Standard unit's details" and “Special unit’s details” worksheets.

The "BOL", "BML", "BOS", “BMS”, "BOS feet" and "BMS feet" worksheets contain the RPC layout in the large, small and feet sectors of the ATLAS barrel spectrometer.
The layouts are presented in a "semi-graphical" format which, in great part, should be self-explanatory. However some clarifications are given in the following:

1) Normally one MDT chamber is covered by two (for BOLs, BOSs) or four (for BMLs, BMSs) RPC units. The two units have an overlapping region in the center of the MDT of 60 mm. Thus for an MDT with a nominal width of (i.e.) 2160 mm, the nominal active area of each RPC unit will be 2160/2 + 30 = 1110 mm. In some cases the MDT is covered by one (BOSs) or two (for BMLs, BMSs) RPC units. In this case the nominal active width of the RPC unit is equal to that of the MDT. These units are normally indicated by an asterix after their name (i.e. BMS-B*). For historical reasons also BML-A and BOS-A are of this type but do not have an asterix in their name.
2) For overlapping units the active layers of the two units are at different distance from the interaction points. The ones which have the active layers closest to the interaction region are shown on a gray background in the layout. A drawing of the overlap region is shown in the “Parameter” worksheet. However the thickness of support panels reported in this drawing are not correct. The correct ones are 9 - 10 - 50 mm (for BOS, BML and BMS units) and 13,5 - 10 - 55 mm (for BOL units) for support panels n° 1 – 2 – 3 respectively.
3) Holes for alignment rays of the barrel spectrometer are only in special units. Some of the standard units (BOS) have holes to accommodate alignment rays of the EC spectrometer. Standard units with holes are indicated in bold characters.
4) Special units (for BOS feet sectors and BMS rib space) are indicated as S1, S2, S3. The detailed mechanical structure of these units is not yet defined.

The “Standard unit’s details” and the “Special unit’s details” worksheets contain detailed information on the various units which appear in the layout worksheets. Again, many information are self-explanatory but some comments are useful:

1) Each detector layer is equipped with 4 readout panels, two measuring eta and two measuring phi. Besides signal strips, each panel has two guard strips connected to ground at their extremities running parallel to the signal strips. The width of these are reported in the worksheet.
2) Position of the RPC units in the ATLAS coordinate system are not indicated since the exact position will be determined after the final designs of the common supports will be finalized. The position of MDT reported in the MDT chambers parameter book can be used as a reference.

Sergio Patricelli

RPC multi-layer structure	Weight (kg/m^2)
Support panel # 1	2,37
Readout panel	0,76
Gas volume	5,16
Pet layer	0,27
Readout panel	0,76
Support panel # 2	1,35
Readout panel	0,76
Pet layer	0,27
Gas volume	5,16
Readout panel	0,76
Support panel # 3	4,09
Total	**21,72**

Lateral profiles	Weight (kg/m)
A-type	0,30
B-type	1,00
C-type	1,32
Total	**2,62**

End plates	Weight (kg/m)
D-type	2,00
Interface to common support (BOS)	2,70
Interface to common support (BOL-BML-BM	3,00

Electronics	Weight (kg/m)
Front End Board	0,09
Back End Board	0,08
Total	**0,17**

Support panel # 1	Weight (kg/m^2)
Aluminum (0.3 mm)	0,81
Glue	0,40
Paper honeycomb	0,35
Aluminum (0.3 mm)	0,81
Total	**2,37**

Support panel # 2	Weight (kg/m^2)
Aluminum (0.1 mm)	0,27
Glue	0,40
Paper honeycomb	0,41
Aluminum (0.1 mm)	0,27
Total	**1,35**

Support panel # 3	Weight (kg/m^2)
Aluminum (0.3 mm)	0,81
Glue	0,40
Paper honeycomb	2,07
Aluminum (0.3 mm)	0,81
Total	**4,09**

Readout panel	Weight (kg / m^2)
Copper (0.017 mm)	0,15
PET (0,19 mm)	0,27
Foam (3 mm)	0,11
PET (0,06) mm)	0,08
Copper (0.017 mm)	0,15
Total	**0,76**

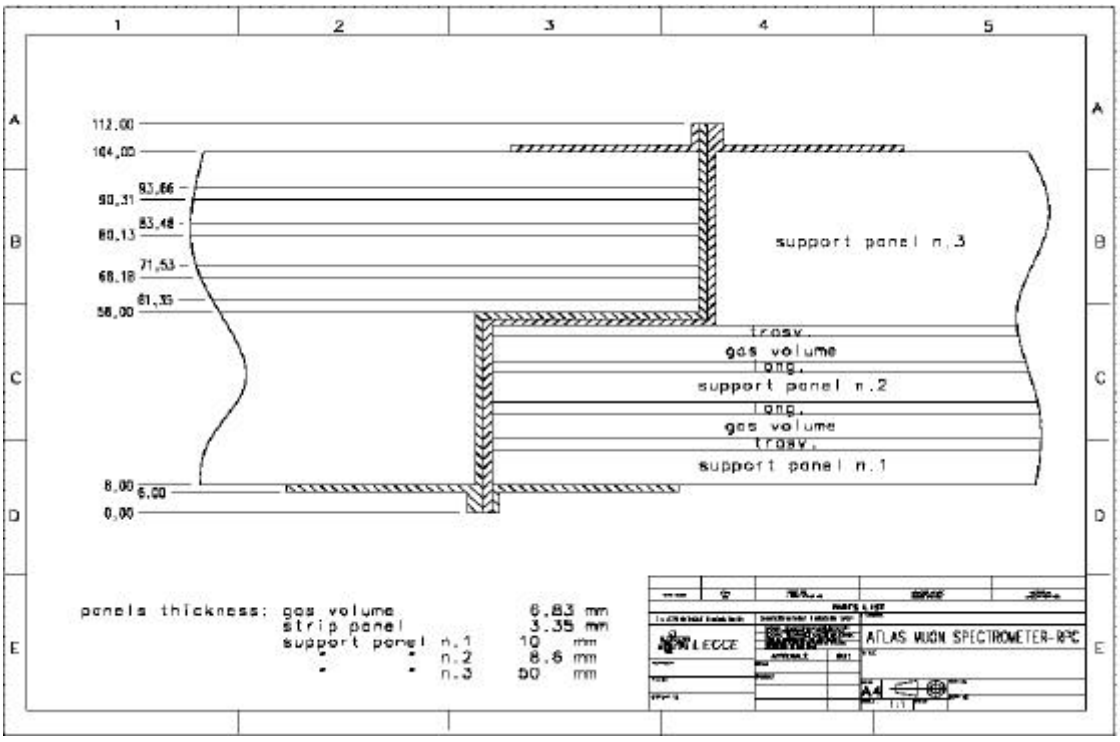
Gas volume	Weight (kg / m^2)
PET (0,19 mm)	0,06
Bakelite (1,8 mm)	2,52
Gas (2 mm)	0,01
Bakelite (1,8 mm)	2,52
PET (0,19 mm)	0,06
Spacers (100)	0,50
Total	**5,16**

Gas volume frame	Weight (kg / m)
Polycarbonate	0,01
Total	**0,01**

Cables	Weight (kg / FE board)
Shielded cable (1 m)	0,12
Total	**0,12**

Services	Weight (kg / module)
Faraday Cage	0,400
Gas tubing	0,124
High Voltage Cable	0,040
Test Cable	0,016
Test Connector	0,014
Low Voltage Connector+cables	0,080
Carter+HV Connector	0,180
Total	**0,85**

RPC Constants	
Aluminium density (kg/dm^3)	2,7
Copper censity (kg/dm3)	8,96
Bakelite density (kg/dm^3)	1,4
Foam density [styreen] (kg/dm^3)	0,035
Paper honeycomb (kg/dm^3)	0,042
Polyetileneterephtalate (PET) density (kg/dm^3)	1,4
Spacer disk weight (kg)	0,005
Gas density (kg/dm^3)	0,006
G10 gensity (kg/dm^3)	2
Polycarbonate density (kg/dm^3)	1
Shielded cable linear density (kg/m)	0,115



SIDE A

MDT ch	BOL.6	BOL.5	BOL.4	BOL.3	BOL.2	BOL.1
Sector 1	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160
Sector 3	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160
Sector 5	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-D 1920
Sector 7	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-E BOL-E 1440
Sector 9	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-E BOL-E 1440
Sector 11	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-D BOL-D 1680
Sector 13	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-E BOL-E 1440	BOL-E BOL-E 1440	BOL-D BOL-D 1680
Sector 15	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-D BOL-D 1680

BOL-D	16	BOL-B	16	BOL-B	16	BOL-D	14	BOL-B	14	BOL-B	5
						BOL-E	2	BOL-E	2	BOL-D	7
										BOL-E	4

Totali Unità BOL	
BOL-B	97
BOL-D	73
BOL-E	22
	192

SIDE C

BOL.1	BOL.2	BOL.3	BOL.4	BOL.5	BOL.6
BOL-E BOL-E 1440	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680
BOL-E BOL-E 1440	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680
BOL-E BOL-E 1440	BOL-E BOL-E 1440	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680
BOL-E BOL-E 1440	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680
BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680
BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680
BOL-B BOL-B 2160	BOL-E BOL-E 1440	BOL-E BOL-E 1440	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680
BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-D BOL-D 1680	BOL-B BOL-B 2160	BOL-B BOL-B 2160	BOL-D BOL-D 1680

BOL-B	2	BOL-B	12	BOL-D	14	BOL-B	16	BOL-B	16	BOL-D	16
BOL-D	6	BOL-E	4	BOL-E	2						
BOL-E	8										

		SIDE A						SIDE C					
MDT ch		BML.6	BML.5	BML.4	BML.3	BML.2	BML.1	BML.1	BML.2	BML.3	BML.4	BML.5	BML.6
Sector 1	BML-G	BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-D BML-D	BML-D	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E BML-G
		1440	1200	1200	1680	1680	1680	960	1680	1680	1200	1200	1440
		BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-D BML-D	BML-D	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E
Sector 3	BML-G	BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-D BML-D	BML-E BML-E	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E BML-G
		1440	1200	1200	1680	1680	1680	1440	1680	1680	1200	1200	1440
		BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-D BML-D	BML-E BML-E	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E
Sector 5	BML-G	BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-E BML-E	BML-E BML-E	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E BML-G
		1440	1200	1200	1680	1680	1440	1440	1680	1680	1200	1200	1440
		BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-E BML-E	BML-E BML-E	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E
Sector 7	BML-G	BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-D	BML-D	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E BML-G
		1440	1200	1200	1680	1680	960	960	1680	1680	1200	1200	1440
		BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-D	BML-D	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E
Sector 9	BML-G	BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-D	BML-A	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E BML-G
		1440	1200	1200	1680	1680	960	1200	1680	1680	1200	1200	1440
		BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-D	BML-A	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E
Sector 11	BML-G	BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E BML-G
		1440	1200	1200	1680	1680	1200	1200	1680	1680	1200	1200	1440
		BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E
Sector 13	BML-G	BML-E BML-E	BML-A	Elevator	BML-D BML-D	BML-D BML-D	BML-E BML-E	BML-D BML-D	BML-D BML-D	BML-D BML-D	Elevator	BML-A	BML-E BML-E BML-G
		1440	1200		1680	1680	1440	1680	1680	1680		1200	1440
		BML-E BML-E	BML-A		BML-D BML-D	BML-D BML-D	BML-E BML-E	BML-D BML-D	BML-D BML-D	BML-D BML-D		BML-A	BML-E BML-E
Sector 15	BML-G	BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E BML-G
		1440	1200	1200	1680	1680	1200	1200	1680	1680	1200	1200	1440
		BML-E BML-E	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-D BML-D	BML-D BML-D	BML-A	BML-A	BML-E BML-E

BML-E	32	BML-A	16	BML-A	14	BML-D	32	BML-D	32	BML-A	4	BML-A	6
										BML-D	12	BML-D	8
										BML-E	8	BML-E	8

BML-D	32	BML-D	32	BML-A	14	BML-A	16	BML-E	32				

Totali Unità BML	
BML-A	70
BML-D	148
BML-E	80
BML-G*	16
	314

SIDE A

MDT ch.	BOS.6		BOS.5		BOS.4		BOS.3		BOS.2		BOS.1	
Sector 2	1920		2160		2160		2160		2160		2160	
	BOS-D	***BOS-B***	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B
Sector 4	1920		2160		2160		2160		2160		2160	
	BOS-D	***BOS-B***	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B
Sector 6	1920		2160		2160		2160		2160		2160	
	BOS-D	***BOS-B***	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B
Sector 8	1920		2160		2160		2160		2160		1440	
	BOS-D	***BOS-B***	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-E	BOS-E
Sector 10	1920		2160		2160		2160		2160		2160	
	BOS-D	***BOS-B***	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B
Sector 16	1920		2160		2160		2160		2160		2160	
	BOS-D	***BOS-B***	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B
	BOS-B	6	BOS-B	12	BOS-B	12	BOS-B	12	BOS-B	12	BOS-B	10
	BOS-D	6									BOS-E	2

SIDE C

MDT ch.	BOS.1		BOS.2		BOS.3		BOS.4		BOS.5		BOS.6	
Sector 2	2160		2160		2160		2160		2160		1920	
	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	***BOS-B***	BOS-D
Sector 4	2160		2160		2160		2160		2160		1920	
	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	***BOS-B***	BOS-D
Sector 6	2160		2160		2160		2160		2160		1920	
	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	***BOS-B***	BOS-D
Sector 8	1440		2160		2160		2160		2160		1920	
	BOS-E	BOS-E	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	***BOS-B***	BOS-D
Sector 10	2160		2160		2160		2160		2160		1920	
	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	***BOS-B***	BOS-D
Sector 16	2160		2160		2160		2160		2160		1920	
	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	BOS-B	***BOS-B***	BOS-D
	BOS-B	10	BOS-B	12	BOS-B	12	BOS-B	12	BOS-B	12	***BOS-B***	6
	BOS-E	2									BOS-D	6

Totali Unità BOS

BOS-B has hole

BOS-B	116
BOS-B	12
BOS-D	12
BOS-E	4
	144

SIDE A

MDT ch	BMS.6	BMS.5	Rib	BMS.4	BMS.3	Rib	BMS.2	BMS.1
Sector 2	BMS-E BMS-E	BMS-C*	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D BMS-D
	1440	960		1440	1440		1440	1680
	BMS-E BMS-E	BMS-C*	S3	BMS-B*	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D BMS-D
Sector 4	BMS-E BMS-E	BMS-C*	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D BMS-D
	1440	960		1440	1440		1440	1680
	BMS-E BMS-E	BMS-C*	S3	BMS-B*	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D BMS-D
Sector 6	BMS-E BMS-E	BMS-C*	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D BMS-D
	1440	960		1440	1440		1440	1680
	BMS-E BMS-E	BMS-C*	S3	BMS-B*	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D BMS-D
Sector 8	BMS-E BMS-E	BMS-C*	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D ***BMS-D***
	1440	960		1440	1440		1440	1680
	BMS-E BMS-E	BMS-C*	S3	BMS-B*	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D ***BMS-D***
Sector 10	BMS-E BMS-E	BMS-C*	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D BMS-D
	1440	960		1440	1440		1440	1680
	BMS-E BMS-E	BMS-C*	S3	BMS-B*	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D BMS-D
Sector 16	BMS-E BMS-E	BMS-C*	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D BMS-D
	1440	960		1440	1440		1440	1680
	BMS-E BMS-E	BMS-C*	S3	BMS-B*	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-D BMS-D

BMS-E	18	BMS-C*	12	BMS-E	12	BMS-E	24	BMS-E	24	BMS-D	22
BMS-E	6			BMS-B*	6					***BMS-D***	2

Totali Unità BMS

BMS-D has cutout
BMS-E has 2 holes

BMS-B*	12
BMS-C*	24
BMS-D	44
BMS-D	4
BMS-E	156
BMS-E	12
	252

Totali Unità speciali

All have 1 hole

S2	72
S3	24

SIDE C

MDT ch	BMS.1	BMS.2	Rib	BMS.3	BMS.4	Rib	BMS.5	BMS.6
Sector 2	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-C*	BMS-E BMS-E
	1680	1440		1440	1440		960	1440
	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-B*	S3	BMS-C*	BMS-E ***BMS-E***
Sector 4	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-C*	BMS-E BMS-E
	1680	1440		1440	1440		960	1440
	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-B*	S3	BMS-C*	BMS-E ***BMS-E***
Sector 6	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-C*	BMS-E BMS-E
	1680	1440		1440	1440		960	1440
	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-B*	S3	BMS-C*	BMS-E ***BMS-E***
Sector 8	***BMS-D*** BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-C*	BMS-E BMS-E
	1680	1440		1440	1440		960	1440
	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-B*	S3	BMS-C*	BMS-E ***BMS-E***
Sector 10	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-C*	BMS-E BMS-E
	1680	1440		1440	1440		960	1440
	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-B*	S3	BMS-C*	BMS-E ***BMS-E***
Sector 16	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-E BMS-E	S2	BMS-C*	BMS-E BMS-E
	1680	1440		1440	1440		960	1440
	BMS-D BMS-D	BMS-E BMS-E	S2	BMS-E BMS-E	BMS-B*	S3	BMS-C*	BMS-E ***BMS-E***

BMS-D	22	BMS-E	24	BMS-E	24	BMS-E	12	BMS-C*	12	BMS-E	18
BMS-D	2					BMS-B*	6			***BMS-E***	6

SIDE A

SIDE C

MDT ch.	BOG.8A	BOF.7A	Foot BOG.6A	BOF.5A	Foot BOG.4A	BOF.3A	Foot BOG.2A	BOF.1	Foot BOG.0	BOF.1C	Foot BOG.2C	BOF.3C	Foot BOG.4C	BOF.5C	Foot BOG.6C	BOF.7C	BOG.8C
Sector 12	1200	1200		1440		1920		2160		2160		1920		1440		1200	1200
	BOS-A	BOS-A	S1	BOS-E / BOS-E	S1	BOS-C / BOS-C	S1	BOS-B / BOS-B	S1	BOS-B / BOS-B	S1	BOS-C / BOS-C	S1	BOS-E / BOS-E	S1	BOS-A	***BOS-A***
Sector 14	1200	1200		1440		1920		2160		2160		1920		1440		1200	1200
	BOS-A	BOS-A	S1	BOS-E / BOS-E	S1	BOS-C / BOS-C	S1	BOS-B / BOS-B	S1	BOS-B / BOS-B	S1	BOS-C / BOS-C	S1	BOS-E / BOS-E	S1	BOS-A	***BOS-A***

BOS-A 2 BOS-A 2 BOS-E 4 BOS-C 4 BOS-B 4 BOS-B 4 BOS-C 4 BOS-E 4 BOS-A 2 ***BOS-A*** 2

Totali Unità BOS

BOS-A has 1 hole

BOS-A	4
BOS-A	4
BOS-B	8
BOS-C	8
BOS-E	8
	32

Totali Unità speciali

S1	14

SIDE A										SIDE C									
MDT ch.	*Foot*		*Foot*	BMF.3	*Foot*	BMF.2	*Foot*	BMF.1	*Foot*	BMF.1	*Foot*	BMF.2	*Foot*	BMF.3	*Foot*		*Foot*
Sector 12		Empty		BMS-E BMS-E 1440 BMS-E BMS-E		BMS-C BMS-C 1920 BMS-C BMS-C		BMS-B BMS-B 2160 BMS-B BMS-B		BMS-B BMS-B 2160 BMS-B BMS-B		BMS-C BMS-C 1920 BMS-C BMS-C		BMS-E BMS-E 1440 BMS-E BMS-E		Empty	
Sector 14		Empty		BMS-E BMS-E 1440 BMS-E BMS-E		BMS-C BMS-C 1920 BMS-C BMS-C		BMS-B BMS-B 2160 BMS-B BMS-B		BMS-B BMS-B 2160 BMS-B BMS-B		BMS-C BMS-C 1920 BMS-C BMS-C		BMS-E BMS-E 1440 BMS-E BMS-E		Empty	
				BMS-E 8		BMS-C 8		BMS-B 8		BMS-B 8		BMS-C 8		BMS-E 8			

Totali Unità BMS	
BMS-B	16
BMS-C	16
BMS-E	16
	48

STANDARD UNITS

	BOL-B	BOL-D	BOL-E	BML-A	BML-D	BML-E	BML-G*	BOS-A	BOS-B	BOS-C	BOS-D	BOS-E	BMS-B	BMS-B*	BMS-C	BMS-C*	BMS-D	BMS-E	Total
# of units in the detector	97	73	22	70	148	80	16	8	136	8	12	12	16	12	16	24	48	184	982
# of detector layers	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Length in z (mm)	1110	870	750	1200	870	750	480	1200	1110	990	870	750	1110	1080	990	960	870	750	
Width in phi (mm)	5090	5090	5090	3680	3680	3680	3280	3900	3900	3900	3900	3900	3200	3200	3200	3200	3200	3200	
Active width (mm)	4850	4850	4850	3440	3440	3440	3040	3660	3660	3660	3660	3660	2960	2960	2960	2960	2960	2960	
Longitudinal (eta) strip pitch (mm)	34,0	35,3	30,3	29,4	26,5	30,3	28,5	29,4	34	30,2	26,5	30,3	27,2	26,4	30,2	29,3	26,5	30,3	
Ground guard on eta strips (mm)	8,0	8,4	8,4	9	8	8,4	9	9	8	8,8	8	8,4	8	9	8,8	8,2	8	8,4	
Transevresal (phi) strip pitch (mm)	30,1	30,1	30,1	26,6	26,6	26,6	26,8	28,3	28,3	28,3	28,3	28,3	30,5	30,5	30,5	30,5	30,5	30,5	
Ground guard on phi strips (mm)	8,5	8,5	8,5	8,8	8,8	8,8	9,6	9,4	9,4	9,4	9,4	9,4	8	8	8	8	8	8	
# of longitudinal (eta) strips/layer	64	48	48	80	64	48	32	80	64	64	64	48	80	80	64	64	64	48	
# of transversal (phi) strips/layer	160	160	160	128	128	128	112	128	128	128	128	128	96	96	96	96	96	96	
# of longitudinal (eta) strips/unit	128	96	96	160	128	96	64	160	128	128	128	96	160	160	128	128	128	96	
# of transversal (phi) strips/unit	320	320	320	256	256	256	224	256	256	256	256	256	192	192	192	192	192	192	
Area/unit (m2)	5,4	4,2	3,6	4,1	3,0	2,6	1,5	4,4	4,1	3,6	3,2	2,7	3,3	3,2	2,9	2,8	2,6	2,2	
Gas volume/unit (lt)	21,5	16,9	14,6	16,5	12,0	10,3	5,8	17,6	16,3	14,5	12,7	11,0	13,1	12,8	11,7	11,4	10,3	8,9	
Weigth of RPC multilayer structure/unit (kg)	116,9	91,6	79,0	89,7	65,0	56,0	31,7	95,4	88,2	78,7	69,2	59,6	71,4	69,4	63,6	61,7	55,9	48,2	
Weigth gas volumes frame/unit (kg)	0,396	0,369	0,356	0,327	0,290	0,277	0,224	0,339	0,329	0,316	0,302	0,289	0,290	0,287	0,277	0,273	0,263	0,250	
Weigth of lateral profiles/unit (kg)	26,7	26,7	26,7	19,3	19,3	19,3	17,2	20,5	20,5	20,5	20,5	20,5	16,8	16,8	16,8	16,8	16,8	16,8	
Weigth of end plates/unit (kg)	4,4	3,5	3,0	4,8	3,5	3,0	1,9	4,8	4,4	4,0	3,5	3,0	4,4	4,3	4,0	3,8	3,5	3,0	
Weigth of electronic boards/unit (kg)	2,3	2,2	2,1	1,9	1,7	1,6	1,3	2,0	1,9	1,9	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,5	
Weight of interface to common support (kg)	7,0	5,5	4,7	7,5	5,4	4,7	3,0	7,5	6,9	6,2	5,4	4,7	6,9	6,7	6,2	6,0	5,4	4,7	
Weight of common support	In MDT parameter book			In MDT parameter book				In MDT parameter book					In MDT parameter book						
Weigth of trigger boxes electronics	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Weight of cables	15,85	12,41	11,85	13,98	11,08	8,94	5,53	14,49	12,36	11,92	11,48	9,25	11,25	11,17	9,45	9,37	9,12	7,31	
Weight of services	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	
Total weight/unit (kg)	**186,4**	**155,1**	**140,5**	**150,3**	**119,1**	**106,7**	**73,7**	**157,8**	**147,5**	**136,2**	**124,9**	**111,8**	**125,6**	**123,3**	**114,8**	**112,4**	**105,4**	**94,6**	
Total area (m2)	522,2	308,0	80,0	289,0	442,9	206,4	23,3	35,1	552,5	29,0	38,2	32,9	52,6	38,4	46,9	68,2	123,6	408,5	3298
Total gas volume (m3)	2,1	1,2	0,3	1,2	1,8	0,8	0,1	0,1	2,2	0,1	0,2	0,1	0,2	0,2	0,2	0,3	0,5	1,6	13,2
Total weight (kg)	18085	11320	3092	10523	17632	8537	1180	1262	20065	1090	1499	1342	2010	1479	1836	2698	5059	17400	126111
Front End boards/unit	56	52	52	52	48	44	36	52	48	48	48	44	44	44	40	40	40	36	
Total # of Front End boards	5432	3796	1144	3640	7104	3520	576	416	6528	384	576	528	704	528	640	960	1920	6624	45020

SPECIAL UNITS

	S1	S2	S3	Total
# of units in the detector	14	72	24	110
# of detector layers	2	2	2	
Length in z (mm)	840	320	660	
Width in phi (mm)	3900	1180	1180	
Active width (mm)	3660	1060	1060	
Longitudinal (eta) strip pitch (mm)	26,5	37,0	26,5	
Ground guard on eta strips (mm)				
Transevresal (phi) strip pitch (mm)	28,3	32,6	32,6	
Ground guard on phi strips (mm)				
# of longitudinal (eta) strips/layer	64	8	24	
# of transversal (phi) strips/layer	128	32	32	
# of longitudinal (eta) strips/unit	128	16	48	
# of transversal (phi) strips/unit	256	64	64	
Area/unit (m2)	3,1	0,3	0,7	
Gas volume/unit (lt)	12,3	1,4	2,8	
Weigth of RPC multilayer structure/unit (kg)	66,8	7,4	15,2	
Weigth gas volumes frame/unit (kg)	0,299	0,095	0,133	
Weigth of lateral profiles/unit (kg)	20,5	6,2	6,2	
Weigth of end plates/unit (kg)	3,4	1,3	2,6	
Weigth of electronic boards/unit (kg)	1,8	0,6	0,8	
Weight of interface to common support (kg)	4,5	1,9	4,0	
Weight of common support	In MDT parameter book			
Weigth of trigger boxes electronics	0,0	0,0	0,0	
Weight of cables	11,4	0,84	1,7	
Weight of services	0,85	0,85	0,85	
Total weight/unit (kg)	**109,4**	**19,1**	**31,5**	
Total area (m2)	43,0	24,4	16,8	84
Total gas volume (m3)	0,2	0,1	0,1	0,3
Total weight (kg)	1532	1376	755	3662
Front End boards/unit	48	10	14	
Total # of Front End boards	672	720	336	1728

Values for special Units are indicative since the design of these Unit is not yet finalized. A new type of standard RPC unit (BOS-D*) could be used as S1 special Unit