

## **SMH 42**

date 1/3/2010

### **installed in the PS:**

PISMH42.3

Newly constructed magnet and vacuum vessel, via consolidation program. Yoke 1, coil 42.5. Installed October 2009 after failure of 42.2.

### **Spare**

SMH42.1, building 169

Refurbished February 2009. Slightly radioactive. Yoke 2, coil 42.2. Magnetic tests carried out, vacuum tests foreseen for March 2010. Feedthrough re-used. Coil – feedthrough brased with 1802. All springs, taquets and ecrous (coil fixation) new. Sublimator filaments checked by TE/VSC. Beam observation being installed at time of writing.

**Spare bumper dipole** with its special vacuum chamber under responsibility of Magnet group.

### **Present state of the spares:**

- **Spare under construction** SMH42.1: This magnet is to be operational March 2010.
- PISMH 42.2 installed in PS from March 3<sup>rd</sup>, 2008 to October 2009. Leak on hydraulic circuit. Repair attempt failed end 2009. To be refurbished. Located building 151 (North Hall). BI observation needs SEM wires connector (Vespel connector and feedthrough)
- Presently several spare flexible striplines are available, but they are shared with PESMH16, BTSMV10 and BTSMV20.
- Two spare coils ordered to allow the refurbishment of SMH42.2 and another spare.
- 1 spare septum blade, i.e. an unfinished coil.

### **Procedure to replace magnet:**

Chassis remains in PS, magnet with tank is exchanged. Bumper dipole remains in place, only the septum tank is removed. The ‘stops’ on the outside of the ring remain fixed, and the ones on the inside are to be loosened. The sublimator on the inside of the PS ring needs to be removed (or the main bending magnet coil cover should be removed during installation). The vacuum flanges between the bumper and the main dipole should be left tightened as it is very hard to get leak tight.

To install the spare, it is advisable to protect the vacuum chamber flanges with kapton sheet, as to avoid scratching of the flanges when inserting the septum tank. The tank is pushed against the fixed stops (outside ring PS), and the inside ones are applied, without tightening. After this the tank is put at the same distance from the bumper magnet (49 mm between bumper and septum tank wall) as before. Kapton sheets can be removed, seals inserted. Great care must be taken with the vacuum chamber of the bumper magnet, since it contains a fragile ceramic tube, on the injection line from the booster. The collar between septum tank and bumper magnet is tightened (19 – 23 Nm) on each bolt of the collar). After this the tank is bolted fixed to the chassis, and the collar between the tank and the PS bending dipole is tightened.

A procedure to estimate and follow up the dose for an exchange, with all detailed steps, has been established and was used for the exchange in 2009.

The flexible stripline has been replaced by its spare during shut down 97, since it showed signs of wear. In June 1999 during the technical stop the stripline was replaced again. The next exchange was done during the winter shutdown of 2001 – 2002. An improved version with added cooling radiators, and copper sheets to reduce dust from friction with the polyurethane was installed in the shutdown of 2005/2006. More successful turned out to be a version with Mylar insulation against the copper braid. This version will be installed as from the 2008 run.

### History

Tank	Yokes	Coils	Installation date	Removal date	remarks
SMH42.1			1/1996	1/1999	Spring provoked short circuit between septum and rear conductor
SMH42.2			1/1999	2/8/2006	Vacuum rise (up to 10-5 mbar) when pulsed
SMH42.1			2/8/2006	3/2008	Preventatively removed, hydraulic circuit tested before removal OK.
SMH42.2			3/2008	10/2009	Leak on compensator and coil end.
SMH42.3	1	2	10/2010	present	