The Muon g-2 Storage Ring Magnet, L. ADDESSI, Z. ARMOZA, J. BENANTE, H.N. BROWN, G. BUNCE, J.C. COTTINGHAM, J. CULLEN, G.T. DANBY, J. GELLER, H. HSEUH, J.W. JACKSON, L. JIA, S. KOCHIS, D. KONICZNY, R. LARSEN, Y.Y. LEE, M. MAPES, R.E. MEIER, W. MENG, W.M. MORSE, M. O'TOOLE, C. PAI, I. POLK, R. PRIGL, Y.K. SEMERTZIDIS, R. SHUTT, L. SNYDSTRUP, A. SOUKAS, T. TALLERICO, F. TOLDO, D. VON LINTIG, K. WOODLE, BNL; D.H. BROWN, R.M. CAREY, W. EARLE, E.S. HAZEN, F. KRIENEN, J.P. MILLER, J. OUYANG, B.L. ROBERTS, L.R. SULAK, W.A. WORSTELL, BOSTON U.; T. KINOSHITA, Y. ORLOV, CORNELL U.; D. WINN, FAIRFIELD U.; A. GROSSMANN, K. JUNGMANN, G. ZU PUTLITZ, P. VON WALTER, U. of Heidelberg; P.T. DEBEVEC, W.J. DENINGER, D.W. HERTZOG, S. SEDYKH, D. URNER, U. of Illinois; M.A. GREEN, LBNL; U. HAEBERLEN, Max Planck Institute fur Med. Forschung, Heidelberg; P. CUSHMAN, S. GIRON, J. KINDEM, D. MILLER, C. TIMMERMANS, D. ZIMMERMAN, U. of Minnesota; V.P. DRUZHININ, G.V. FEDOTOVICH, D.N. GRIGOREV, B.I. KHAZIN, N. RYSKULOV, S. SEREDNYAKOV, YU.M. SHATUNOV, E. SOLODOV, Budker Institute of Nuclear Physics; K. ENDO, H. HIRABAYASHI, A. YAMAMOTO, KEK; K. ISHIDA, RIKEN; Y. MIZUMACHI, Science U. of Tokyo; S.K. DHAWAN, A. DISCO, F.J.M. FARLEY, X. FEI, V.W. HUGHES, D. KAWALL, M. GROSSE-PERDEKAMP, S.I. REDIN, YALE U. - We are in the process of measuring the muon anomalous magnetic moment to +/- 0.35 parts per million of itself, an improvement of a factor 20 over the CERN experiment of 20 years ago [1]. At this new level of precision we will be sensitive to the weak contributions from the W and Z gauge bosons, expected at +1.3 ppm, and also to any new physics which couples to the muon such as an anomalous W magnetic moment, or a new Z'. Our sensitivity to muon mass generating mechanisms will be at a 5 TeV scale. To achieve this high precision, we must increase the number of observed muon decays by a factor of 400 and decrease systematic errors by a factor of 5 to 10 from the CERN experiment. This report will focus on the new storage ring magnet, 14.2 meters diameter, which replaces 40 dipoles which were used to form the storage ring at CERN. The magnet was completed in 1996 when it was powered successfully to full field. It is driven by 3 superconducting coils, and the field, 1.45 T, is shaped by iron. It is a C magnet open toward the inside, with the muons delivered through a hole in the backleg. Stored muons then decay to electrons which spiral to the inside to 24 lead/scintillating fiber calorimeters which are spaced around the inner circumference. The muon storage region volume is 9 cm diameter in cross section, with an orbit circumference of 45 meters. We must know the average magnetic field seen by the stored muons to 0.1 ppm. We have a series of adjustable iron shims along

with a matrix of wires for current shimming to obtain a homogenous magnetic field. We will discuss the magnet construction, the forces, and the present status of field adjustment. The first run took place in June 1997.

[1] J. Bailey et al., Nucl. Phys. B150, 1 (1979).