I ACKNOWLEDGEMENTS

During my work presented here, I have realised that successful research leading to the production of a PhD thesis requires the support, motivation and input from a team of devoted people and institutions from both the professional and private environment. Without these people, such an undertaking could not be done. It can only be a modest appreciation of their contribution to acknowledge them here.

I would like to thank the University of Bath and in particular the Department of Engineering & Applied Science and the Department of Mechanical Engineering for providing the technical facilities and financial funding for my research work.

I am glad to have the opportunity to give my greatest thanks to both my supervisors Dr Irene Turner and Prof Tony Miles. I cannot adequately express my appreciation of the great support, friendly help and useful input that was permanently available for me. It was only due to their co-operative work and friendly attitude that I was able to take the opportunity to combine a lectureship with my research work. It was a great pleasure working with them. Thank you, Irene. Thank you, Tony.

I also want to thank StrykerHowmedicaOsteonics as represented by Dr Christina Doyle, Dr Nigel Smith, Mr Gerard Insley for their financial support and the provision of materials. My thanks also go to the Department of Orthopaedic Surgery at the University of Bristol and Prof Ian Learmonth and Dr James Cunningham who provided local test facilities. I also want give my personal thanks to Mr Ashley Blom and Mr Charles Gozzard, two surgeons and now friends who I fruitfully collaborated with.

I would like to give special thanks to the technical staff of the University of Bath without whom the manufacture of devices, conditioning of test rigs and software and technical trouble-shooting had not been possible. In this context I would like to thank Mr Richard Weston, Mr Vijay Rajput and Mr Guy Brace.

Last but not least I want to thank my parents Ursula and Rolf, my girlfriend Beatriz and my good friends for their support, motivation and sympathetic understanding.